PCFormat

THE WORLD'S GREATEST PC MAGAZINE

HD-DVD
VERSUS
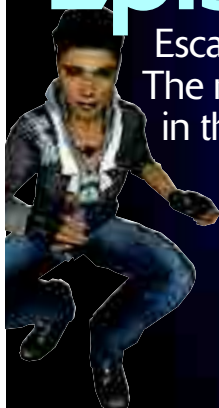## BLU-RAY

25GB optical discs are here. First PC drives tested inside!

FOUR 3D CARDS, ONE PC

7900 GTX

HANDS-ON! Ultra-fast graphics in one, two & FOUR board flavours

50
PAGES OF NEW REVIEWS
Portable satnavs
USB hard drives
Middle Earth 2
Empire at War

Half-Life 2 Episodes

Escape from City 17!
The next two chapters in the saga revealed

The big picture
10 widescreen LCDs from £99

Vote for the pirate politicians

Why Sweden and France are taking filesharing to the polls

RIP TV TO YOUR IPOD

Software & guides for putting movies and TV in your pocket

APRIL 2006 # **186 DVD**   £6.49
04>

Future

9 771467 064027

18

SOME DISC CONTENT IS RATED FOR OVER 18s

HOW TO >> **CREATE** QUAKE IV MODELS >> **BE** A SUPERBLOGGER >> **MAKE** FREE MOBILE CALLS

PCFormat
THE WORLD'S GREATEST PC MAGAZINE

in your mag

#**186** April 2006

Blu-ray vs HD-DVD
Who could win the high-def battle
and why you'll want to be on board **36**

42 Vista

46 HL2: Episode One

52 Copy protection
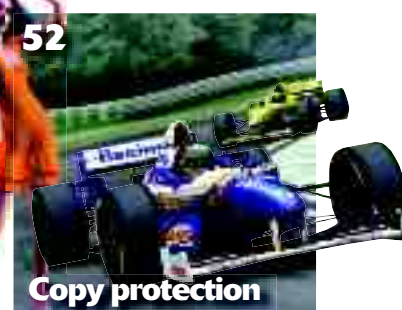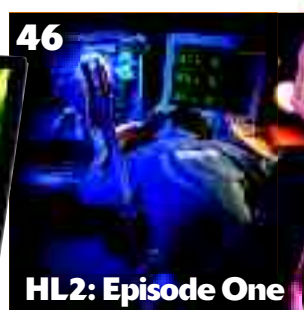
56
NVIDIA 7 Series
We test team green's new breed: the budget-friendly 7600GT and the 7900GTX behemoth

60
USB hard drives

72
Satnavs

124
Widescreen LCDs

Inside this media-savvy April issue…

Test drives
Two next-gen technologies go head to head. Which, if any, is the new Betamax? **36**

Freeman is back
Gordon and the gang return to fight back the invading Combine hordes **46**

Avez-vous MP3?
Sweden and France could soon become filesharer-friendly **13**

Face-off
Put your boat race in *Quake* **98**

7900 GTX
Our hands-on review of NVIDIA's latest powerhouse **54**

Break the hobbit
Join the dark side in *Battle For Middle Earth 2* **82**

LCD Supertest
Will anything top Dell's insane 30-inch widescreen panel? **124**

Pocket TV
Watch TV on your video iPod – for free! Yes, really… **104**

Chat for free
VoIP on your mobile **112**

PCFormat
on your disc

98

DO THIS
Work on that artistic temperament

Workshops

Other essential programs

WORKSHOPS

GAMES
» ADRIFT » Adventure Game Studio » Game Maker » Legendary Tales » Point & Click Developement Kit » RPG Toolkit » Sphere » The Scrolling Game Development Kit » Tile Studio » VERGE

XP
» BootSkin » Desktop Sidebar » Flyakite OS X » Kapsules » ObjectDock » Samurize » SphereXP » Virtual Desktop Toolbox » XP Syspad » Yahoo! Widget Engine

NETWORKING
» SJPhone » Skype for Pocket PC » AirSnare » Bitmeter » LanSpy » LimeWire » SensiveGuard » TightVNC » WiFi SiStr » ZoneAlarm

LINUX
» AbiWord » Celestia » Firefox » Gaim

» Mozilla Suite » Scribus » Thunderbird » xine

CODING
» Basic4GL » Crimson Editor » Dev-C++ » Nvu » PHP Designer 2006 » Python » Source Edit » Visual Prolog » XML Marker

UPGRADES
» Belarc Advisor » Dead Pixel Locator » Emsa DiskCheck » FreeMeter » Fresh Diagnose » HeavyLoad » Monitor Calibration Wizard » RAM Idle LE » RightMark Audio

PHOTO
» CleanSkinFX » Digital Camera Enhancer ` » FastStone Image Viewer » FastStone Photo Resizer » IrfanView » JAlbum » PC Inspector Smart Recovery » RawShooter Essentials 2006 » The GIMP » VisiPics

MORE…
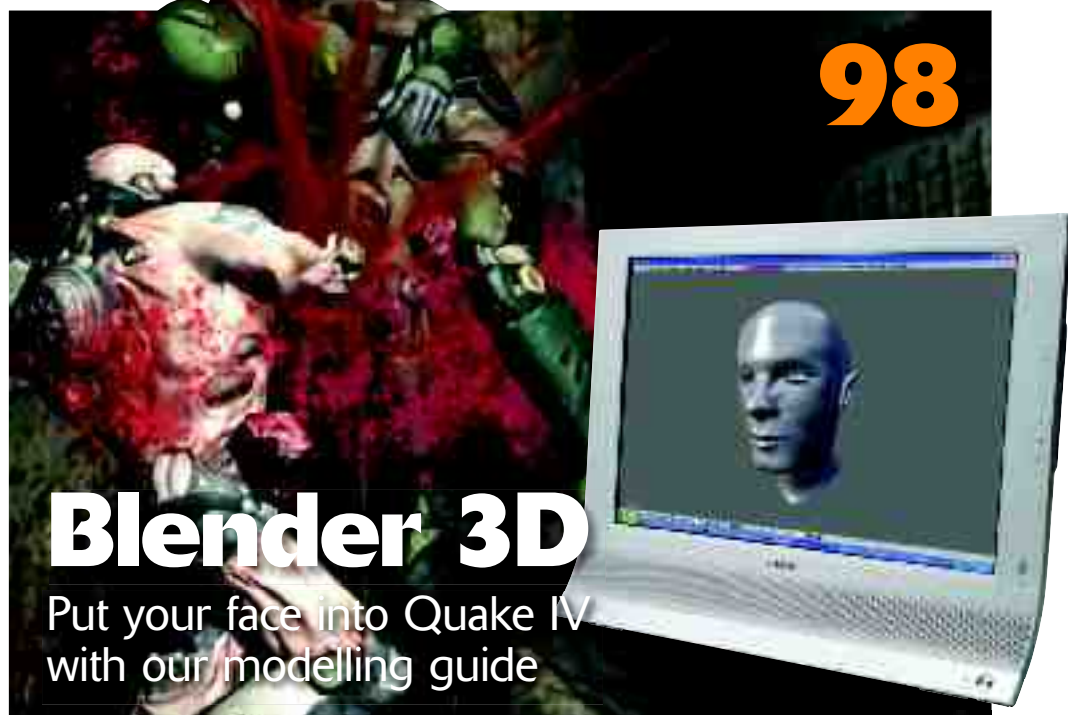
Blender 3D
Put your face into Quake IV with our modelling guide

106
WinOptimizer

107
Superblogger
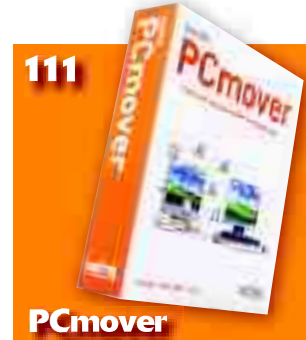
111
PCmover

On this month's DVD…

TV to go
Convert any video file to play back on your spanky new iPod **page 104**

Online photos
Share your many snaps with the world, with *Serif MediaPlus* **page 110**

All you need
Each month, we carry the best free full software for all occasions **page 97**

Mobile Skype
Make free VoIP calls from the comfort of a PDA or Smartphone **page 112**

Easy move
Take the sting out of setting up a new PC by transferring all your old gubbins to it with ease **page 111**

Stroggified
Give yourself a starring role in *Quake IV* by creating your own unique player model **page 98**

Window clean
Restore Win XP to tasty as-new performance with *WinOptimizer* **page 106**

Go go go!
Give *Lockdown*, the latest Tom Clancy shooter, a tactical workout **page 7**

Be a part of it
Remake the Big Apple in your own image with *Tycoon City* **page 7**

STILL BUYING CDS?
You get **15 times** more stuff on our **9.4GB** DVD!

Empire at War

This is the game you're looking for...

A

Commandos SF **B**

Shadowgrounds **C**

War on Terror **D**
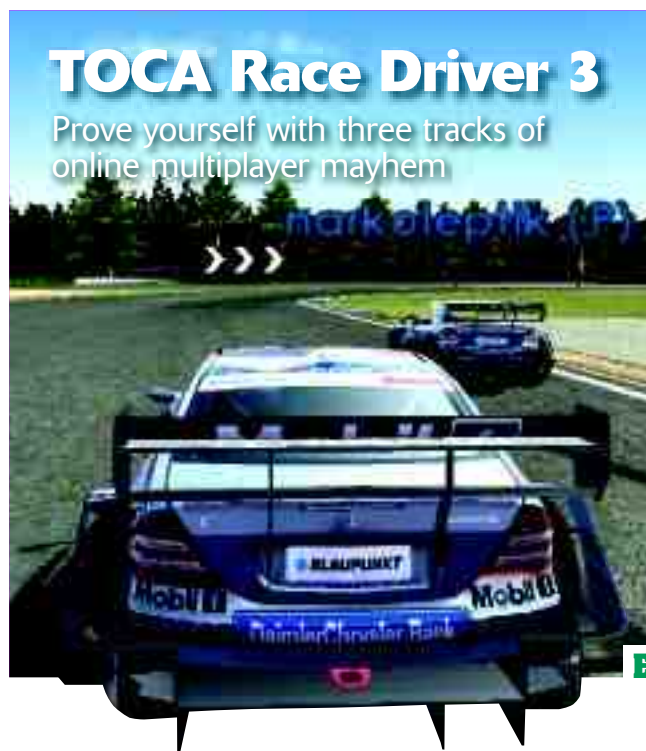
TOCA Race Driver 3

Prove yourself with three tracks of online multiplayer mayhem

E

On your disc you'll find the best apps, demos and tutorials

The best full programs
Our discs deliver top-quality, high-value apps and utilities. Let us know if there's something you want and we'll do our best to get it for you.

Play the latest games
Don't wait hours to download this month's best games demos. They're all here, right now.

Who needs manuals?
We want you to get the most from your free programs. *PCFormat* features more software guides than any other PC magazine in the world.

Technical support
We like to think our discs are always problem free, but if you do have any issues, contact the disc support team on 01225 822 743 or via email at: **support@futurenet.co.uk**.

Coverdisc contents

DVD ONLY?
Games and apps marked with an * are also on the CD editions

PLAY THIS

A Empire at War
Get your mitts on the fastest hunk of junk in the galaxy and lead the assault!

LMB	**Select**
RMB	**Action**
MSWheel	**Zoom**
CTRL + Num	**Group Units**
Space	**Cinematic View**

B Commandos Strike Force*
Successfuly making the transition from top-down to FPS is Eidos' latest Nazi-fest.

W,S,A,D	**Movement**
LBM	**Shoot**
L.Shift	**Run**
Space	**Jump**
Tab	**Switch Commando**

C Shadowgrounds
Beware what lurks in the dark. And keep a selection of big guns on hand, too.

W,S,A,D	**Movement**
LBM	**Primary Fire**
RMB	**Secondary Fire**
F	**Flashlight**
E	**Use**

D War on Terror
Don't get your tanks in a twist and watch out for the RPGs mounted on VW campers.

LMB	**Select**
RMB	**Action**
MSWheel	**Zoom**
CTRL	**Force Fire**
Tab	**Objectives**

E TOCA Race Driver 3
The new multiplayer demo throws you right into the online racing melting pot.

L/R Cursor	**Steering**
Up	**Accelerate**
Down	**Brake**
Space	**Handbrake**
C	**Change View**

Loads more games content

GAME DEMOS
>> Toca 3 (multiplayer) >> Tom Clancy's Rainbow Six Lockdown >> Battle of Europe >> Keepsake >> Pacific Storm >> Splat Magazine Renegade Paintball >> Tycoon City: New York

GAME VIDEOS
>> Battlefield 2: Euro Force >> Crashday >> D&D Online >> Huxley >> Battle For Middle Earth 2 >> Marc Ecko's Getting Up >> Panzer Elite Action >> RF Online >> Star Wars: Empire At War >> Tony Hawk's American Wasteland

MAPS/MODS
>> BF2: Desert Conflict @Battlefield 2 >> BF2: Codename

Eagle: Legends >> HL2: Deathmatch Pro

PATCHES
>> Battlefield 2 V1.2 >> Black & White 2 v1.2 >> F.E.A.R. v1.00 - v1.03 >> Quake IV retail v1.1 beta >> Star Wars: Empire at War v1.1 >> The Sims 2 Nightlife v1.2.0.355

GAME EXTRAS
>> 50 Shareware games

For a full list of everything on the disc please refer to the disc's interface and packaging. Controls for the games are listed there too.

PCFormat
Welcome

Just 12 months ago, blue lasers still felt like something that cropped up in these pages at least once a year, but never seemed to get any closer to becoming a reality. It was one of those technologies that 'they'll have in the future' – but was way beyond today's hardware.

It's a shame, then, that now it's here, the launch of Blu-ray is to a slightly mixed reception. The format battle with HD-DVD is interesting – and still undecided – but the real letdown comes with the intrusive levels of copy protection that have been built into every player and disc. Who gave the movie companies the right to download extra patches to 'upgrade' the DRM in PC based players? And how can we trust them to get it right, after incidents like the Sony rootkit fiasco? Just look at how irksome copy protection in games (p52) can be.

It's important not to let issues like this take away from the achievement, though. Blu-ray is incredible for backup storage – an increase of well over 100 times the capacity of CD-ROMs, and it's only just over a decade since they launched. We're living in the future.

Enjoy the issue,

Adam Oxford, Editor

Alec Meer, Deputy Editor

Will Microsoft's Origami be the iPod killer Alec's been desperately waiting for? MS is keeping details on the device under its hat, sitting back and letting the rumour flow, but next month we'll endeavor to bring you the story on this curious MP3/video/gaming handheld-cum-Tablet PC. Of course, if another monolithic tech corporation seizes control of the market, then we're in no better a place than we were to start with.
Achievement of the month Not buying any robots for the entire duration of February. March, so far, is a starkly different matter.

Al Bickham, Technical Editor

After a significant break, Al returned to *World of Warcraft* this month, with the assistance of the Dell 3007FPW monitor (see page 124). This peripheral vision-filling monstrosity runs at a native 2,569x1,900 which, as luck would have it, is a resolution supported by *WoW*. All we need to do now is tear him away long enough to actually do some work.
Achievement of the month Benchmarking 12 video cards, and not turning into a gibbering wreck of a human being.

James Carey, Games Editor

Killed several components in an effort to upgrade his brother's PC. Three motherboards and two processors to be precise... don't ask. Thankfully no games were harmed in his custody this month, which is more than can be said for the man himself (see page 49). In fact the fantasy franchise-tastic issue is thriving with *D&D*, *LOTR* and *Star Wars: Empire at War* all reviewed in these pages.
Achievement of the month Hob-nobbing with the horsey set at the races. I say, bad show that man, what?

Jeremy Laird, Technology Writer

PCF's high-flying man of mystery has had another busy month full of derring-do, frantic networking and clandestine PR shenanigans. So impressed was he by the gargantuan Dell monitor casting an enormous shadow over this month's Supertest that he rushed out and purchased one – possibly in order to make the more financially humble *PCF* scribes jealous. Blocking out the sun has never been more satisfying (and rarely more expensive). It seems the Beemer will have to wait.
Achievement of the month Maintaining levels of excitement surrounding the impending launch of Vista that border on frightening.

PCFormat

THIS ISSUE WAS BROUGHT TO YOU BY…

Editor Adam Oxford
Deputy Editor Alec Meer
Art Editor Annelise Brant
Games Editor James Carey
Technical Editor Al Bickham
Production Editor Alex Jones
Technology Writer Jeremy Laird
Writer Dave James
Editorial Assistant Mike Channell
Technical Writer Luis Villazon

Picture Editor Sarah Kennett
Cover Photography Philip Sowels
Cover Model Sophia Finch
Make-up & Clothes styling Gina Akers at @aqua-G
Hair Gina Akers and Zoe Roberts at @aqua-G, Swindon
Photography Dave Caudery, Joby Sessions, Amanda Thomas, Andy Short, Jesse Wild
Design Nick Aspell, Ziggi Baker, David Dyas, Chloe Rafferty, Singh Sethnam, Simon Warbrook
Illustrations & image manipulation Mel Croft, Chris Garbutt, Steve May, Simon Winsor
Disc Editors Jeremy Ford, Ben Harling
Site Editors Chris Lloyd, Matt Cole
Software Copyright Co-ordinator Sarah Williams
Contributors Mike Abolins, Ben Birchall, John Brandon, Richard Cobbett, Alex Cox, Tim Edwards, Dean Evans, Geoff Harris, Kieron Gillen, Dan Grabham, Dan Griliopoulos, Ben Harling, Jon Hicks, Paul Hudson, Lee Hall, Michael Lewis, Nick Mohr, James Morris, Simon Pickstock, Matthew Richards, Jim Rossignol, Sam Rowlands, John Walker

Publishing Team
Group Publisher Stuart Anderton
Group Senior Editor Nick Merritt
Group Art Editor Ian Miller
Publishing Director Dom Beaven

Advertising
Tel 01225 442244 **Fax** 01225 732282
Senior Ad Manager Debbie Blackman
Display Sales Danie Ward, Paul Guest, Max Elvin, Gemma Bell
Group Accounts Alex Irwin, Di Clydesdale, Sean Igoe
Classified Matt Bailey, Tim Weeks

Marketing
Marketing Manager Fiona Tully
Marketing Executive Jennifer Wagner
Overseas Licensing Tim Hudson

Production
Production Manager Claire Tovey
Production Co-ordinator Diane Ross

Customer services
Subscriptions Manager Wayne Timbrell
Tel 0870 837 4722

pcfmail@futurenet.co.uk
30 Monmouth Street
Bath BA1 2BW UK
Tel 01225 442244 **Fax** 01225 732295
Web www.pcformat.co.uk
Subscribe 0870 837 4722

AROUND THE WORLD WITH PCFORMAT

PCFormat's outrageous popularity isn't confined to the UK – the magazine is licensed to the following countries in Europe, Africa and Asia.

DENMARK

SLOVENIA

SOUTH AFRICA

THAILAND

PORTUGAL

ITALY

AUSTRALIA
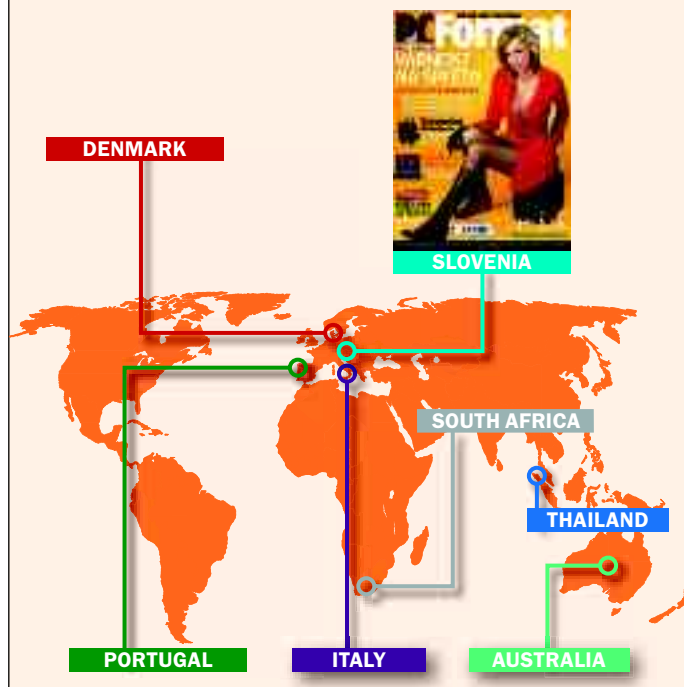
Front end

THE BEST OF THE MONTH IN COMPUTING

Blu velvet

Finally, Blu-ray and HD-DVD; the next-gen optical storage formats are almost here. Check out our stat-tastic comparison and hands-on first impressions on p36.

Store it up

Hard drives full of games, MP3s, photos and angry letters to your local councilman, but you've no IDE or SATA points left? Then take the strain away with an external USB drive – five of the best face off on p60.

Eye Candy
Tower of strength

Want an affordable new rig? This Power Tower from Yoyotech is a good place to start, but you can turn it into a blinding games rig by upgrading the RAM and graphics card at a later date. As it is, it'll handle modern games just fine. Yours for £749 from **www.yoyotech.co.uk**

Under the hood
AMD Athlon 64 3200+
512MB DDR400
200GB SATA 7,200rpm hard drive
NVIDIA GeForce 6600
16X Dual-layer DVD R/W
8-channel audio
17-inch Samsung TFT monitor

Frag it yourself
Don't just play games – make them. This issue kicks off a four-part series on creating a custom *Quake IV* player model and skin all of your own. Turn to p98 and begin the Stroggification.

Wide-eyed
This agreeable 17-inch Samsung TFT provided with the Yoyotech PC is not a widescreen monitor. But if it was, it would no doubt appear in our widescreen monitor Supertest, which kicks off on p124.

Bienvenue filesharing

The UK piracy crackdown continues, but Europe could soon become a copyright utopia…

This spring saw landmark court cases for Britain, with this sceptred isle's first civil actions against filesharers. The cases were brought by the British Phonographic Industry (BPI) against two known sharers. The unnamed men, a father of two from Brighton and a man from King's Lynn, gave up their option to settle, deciding instead to have a day before the beak.

PCF salutes their bravery, but the court found in the BPI's favour, ending speculation that copyright laws are untested. The final bills could run to as much as £20,000 apiece.

Both men were classed as "major uploaders", which is what authorities are specifically chasing. "We see uploading as a more serious infringement than illegal copying (making one copy), which is why we focus on uploaders," Matt Phillips of the BPI told *PCFormat*. The crackdowns have yet to focus, then, on casual downloaders (which is still deemed illegal, of course), but if you've got a shared folder full of MP3s open in *KaZaa*, you might want to reconsider your position.

Meanwhile, across the Channel, the land which inspired Freedom Fries has just become a great deal more appealing for European proponents of free P2P downloading. The libertarian land of France has just taken its first tentative steps towards legalising filesharing. Precedents have already been set which could soon make France the peer-to-peer filesharing haven of the free world.

Things looked very different back in December, as the DADVSI bill (Droits d'Auteur et

> **"The anti-P2P community are becoming indignant"**

Alec Meer
HAS SEEN THE LIGHT

God help me, I've become a terrible Linux bore...

Everyone's question is slightly different: "Why?" "Does it look any prettier?" "Is it quicker?" "Can you play games?" "Has it made your life any different?" "Don't you have to know loads of command lines?"

Respectively, the answers are: "I was bored," "Hell no," "Not really," "Quake IV and some awful puzzle crap," "People are afraid to go to the pub with me now," and a few, yes. But it's kind of gratifying."

I've been running Ubuntu for about three weeks at the time of writing. I only switch to my Win XP install for stuff that won't run on Ubuntu. But apart from that, all my office work, web browsing, instant messaging, music and movies is carried out in Linux without a hitch. Well, I say without a hitch; it's fine now, but required two or three days trawling the web to find a few command lines. There's a genuine pride in the achievement, even if I've yet to experience the improvements over Windows XP that Linux diehards claim exist. What's really odd, though, is that I'm far better in our twice-daily Quake IV deathmaches on Linux than I was on Windows. Maybe there is something to this l33t thing after all...

Droits Voisins dans la Socit de l'Information 1206) sat before the French parliament waiting to be passed. This bill sought to criminalise anything that could be used to bypass copy protection or read copyrighted media. Effectively it would outlaw the use of all P2P clients, instant messagers with file transfer features, private backups and any open source software deemed to be 'unlicensed'; especially the ever-popular free media players. If caught using an open source player the bill proposed a maximum three year jail term as well as €300,000 fines, all for just watching legitimate DVDs on deliberately copyright-free software.

UN LOOPHOLE

To make matters worse, the devious supporters of DADVSI pencilled in the parliamentary reading of the bill for just before Christmas, when most of the house would be with their families and not spending time too much at work. Politicians are politicians the world over...

This obviously didn't go down well with the nay-sayers, and in response, UMP Alain Suguenot quietly added another clause to the bill: "Authors cannot forbid the reproductions of works that are made on any format from an online communication service when they are intended to be used privately and when they do not imply commercial means directly or indirectly." In exchange for this legislation he asked for a €5 a month flat tariff on internet users to offset the 'damage' done to the entertainment industry. Essentially this means a license fee to download anything you want, so long as you don't make money from it. That's utopia as far as *PCF* is concerned. The bill was passed by 30-28, with over 500 deputies absent; the second reading concerning open source software is yet to happen at the time of writing.

It was now the anti-filesharing fraternity's turn to get indignant, with the French government making placatory noises. Recently, a spokeswoman for the Motion Picture Association of Europe was quoted on Ars Technica as saying "Everything we're hearing from the government is that

Richard Falkvinge of the Swedish Pirate Party – the chances of him becoming Prime Minister are probably rather slim.

would "put French law in conflict with EU legislation and international treaties."

The entertainment and copyright bigwigs were

"France has just taken tentative steps towards legalising filesharing"

it won't happen," The IFPI, the European equivalent of the RIAA, said that legalising P2P filesharing

Almost any movie, album or app can be downloaded these days. International laws vary on just how illegal this practice is.

obviously upset, then, when just before Parliament reconvened for the next round of readings, the French courts decided to set a legal precedent all by themselves by letting off a serial filesharer because he was downloading for private use. 'Anthony G' was found with over 1,800 MP3 and DivX files when he was investigated by the SCPP. The judge stated that, according to existing French law, citizens can make fair use of copyrighted materials so long as it's not for commercial gain – thus, Anthony G walked free.

Elsewhere in Europe, defiant Swedish filesharers have created the

Piratpartiet (the Pirate Party). Their manifesto holds that "copyright is a monopoly on a piece of culture. Patents are monopolies on pieces of knowledge. Like almost any other monopoly, they are good for the monopoly holder, but horrible for the society at large."

POLITICAL PIRATES

The Pirate Party is trading on the twin issues of privacy and copyright infringement, and is actively choosing not to publicise an opinion on any issue except these two. This could ultimately impact on its attempts to garner the 225,000 votes it needs in order to stand for election in Sweden's general elections this coming Autumn. If there's one thing to be taken from these contradictory stances on filesharing across Europe, it's that no one yet seems entirely clear on where lines should be drawn, or which side will ultimately be proved right. **PCF**

BPI SAYS "It is absolutely clear in UK copyright law that unauthorised filesharing is illegal." Matt Phillips of the BPI reiterates the current legal situation in the UK.

At last! We can download the entire internet in only 17.5 seconds.

100Mb broadband!

At last, Brits get more bandwidth than they can eat, together with legal movie and music downloads

You read that right – 100Mb broadband connections are hitting the UK, with cable firm NTL announcing trials of its ultra-service. The bad news: initially it'll only be available in Ashford, Kent, and NTL was unable to give *PCF* word on a national rollout, or when other ISPs might follow suit. "It's an early implementation, so it'll be a while before a standard exists," explained NTL's Director of Network Strategy, Kevin Baughan. "It's not possible for me to predict it." It's enough to

simultaneously stream three different high-definition TV channels. That's bearing in mind that only a very select few in this country could stream even a single channel currently. Also interesting is that NTL is working with squeaky clean BitTorrent to offer legal downloads. Again, NTL wouldn't confirm at the time of writing exactly what content would be available, but the choice of BitTorrent rather than some proprietary, system tray-hogging horror is a reassuring one. Kevin Baughan told us that pre-approved

legal downloads would be hugely accelerated for 100Mb customers by NTL, locally caching the files and acting as maximum speed "trusted peer who is always there, so you're no longer dependent on computers at the edge of the network."

Given that BitTorrent is based around uploading as much as it is downloading, one potential wrinkle is that the upstream of the 100Mb is nowhere near the downstream; just "several megabits,". Which means you won't be streaming your own HDTV channel any time soon...

Gargle with Google

Enterprising squaddie flouts Google's intellectual property. Online search giant clearly not amused

While Google is busy defending the privacy of its users (see last issue), its own intellectual property is being abused. Over in Iraq its name is being taken in vain. Or Evian, even...

Google Water is not the next phase in global domination by the search company – it's a brand of bottled, ionised tap water being sold on the streets of

the former warzone, complete with the iconic coloured lettering. Google has stressed that it has nothing to do with the product, and it's just one of many bogus items being traded on a strong Western brand. The water came to public attention when a Marine based in Iraq posted a bottle of the copyright-infringing beverage on Ebay. The auction house has

removed the item for obvious reasons, despite the seller claiming 75% of the sale would go to charity and that the auction was done to raise awareness of how corporate America effects the world. Still, if Google Video goes belly-up at least the search engine kings know there's a new market to exploit.

FACT!

Over 10 billion instant messages are exchanged worldwide everyday, and the average European internet user spends three hours each month engaged in online chat.

PCFtest
PHOTO SHARING

Sharing your own personal vision of the world with the great unwashed of the internet has never been easier, but which service should you use?

What is it?	Pros	Cons	Score
Flickr www.flickr.com **Massive userbase equals an eclectic range of material and it's certainly one of the easiest systems to use.**	Free. Integrated posting to your blog (Livejournal, Blogger and others), RSS, even a mobile-browsable site so you can show your pics in the pub.	It's all good. You do have to sign up to the evil Yahoo! empire, though. Not a huge deal, but may offend those with any indie sensibilities.	4/5
Yafro www.yafro.com **Will they ever run out of stupid site names? A stream of banal photos, listed by how many seconds ago they were posted.**	Kind of fascinating to watch the digitised stream of other people's consciousness. It's very loosely regulated so you can post virtually anything.	People post virtually anything. Pornographic images of dubious origin lurk in amongst the poor quality photography, so click carefully.	1/5
PhotoBox www.photobox.co.uk **A 'strategic partner' of FujiFilm, PhotoBox let you share images for free, but will also provide high quality prints for a smallish fee.**	Free service to upload and share, but allows you to print images and even sell prints of your photos.	Only 200MB of storage. This goes up by 50MB for every print order, but it's still a tad stingy. No keyword search.	3/5
Fotki www.fotki.com **A similar service to Photobox. Focuses on building a community complete with contests (best 'Bird In Flight' pic and the like).**	Free, unlimited storage, ability to print photos. Easy to use and crammed with extras. A hub of activity for photophiles.	Only Premium members get FTP. Free members must upload pics individually or use a proprietary client.	4/5
Truprint www.truprint.co.uk **The UK leader of mail order photo processing is still going strong in the digital age. It offers sharing, but the focus is still the printing.**	Free photo album sharing service plus one free hi-res print and 20 free 6x4 prints. It'll even print to a mug or a t-shirt should you wish it.	There's no album searching. In fact, sharing your images requires some effort and feels like a grudging afterthought rather than an integral feature.	2/5

CONCLUSION It all comes down to how you view your photography. If you want to share physical prints with friends as gifts, then your best bet is to go with an established name, such as Fuji or Truprint. However, if you're happy browsing Jonny Stranger's grainy bedroom JPGs, Flickr or Fotki would fit the bill far better.

Peruvian podcasting farmers

Despite a distinct lack of Zen Micros and iPods in the remote Andean villages of Peru, they're still taking full advantage of twice-monthly educational podcasts. Though they only have access to electricity for two hours a day, UK charity Practical Action is sending podcasts to eight telecentres in the Cajamarca region.

These centres burn the programs onto CDs, which are then re-broadcast over the local radio networks. Each cast is relevant to a particular region: in Chanta Alta it's animal husbandry and in Chilete it's all about the grapes.

Rising standard
Yet another rival to Blu-ray and HD-DVD rears its head

With the recent rise of the Chinese technology market, the licensing agencies for both Blu-ray and HD-DVD must have been rubbing their hands togther with unconcealed avarice at the revenue they expected from the country. Unfortunately for them, a consortium of 130 domestic and foreign tech companies has been working for four years on a new national codec to rival both MPEG4/H.264 and WMV-9.

The Audio Visual Coding Standard (AVS) was conceived after relations between manufacturers and DVD licensing agencies became tense over fees the Chinese saw as excessive. Since then, companies in China have been working to limit their reliance on Western standards. The codec's backers believe that AVS could save manufacturers and consumers millions of dollars by avoiding the international royalties. The AVS was approved at the end of December as a possible national standard and is expected to be named as such soon. AVS systems should arrive towards the end of the year in devices such as mobile phones and optical drives.

A video codec that's more Chinese than a number 42 with egg fried rice.

The piracy of software may have bigger profits than drugs, but we've not yet seen evidence of an overdose of Microsoft Office.

MS closes the net on XP fraud

Bootleg copies of Windows are more lucrative for dealers than drug trafficking, according to Microsoft

Buy a kilo of cocaine for £30k and you can sell it for £60k. Buy 15,000 copied *Office 2000 Pro* CDs and you can sell them for £300k. That astonishing 900% profit goes a long way to explaining why Microsoft's taking another shot at reducing the staggering number of pirated copies of *Office* and Windows. 16.7% of PCs fail the Windows Genuine Advantage test (an online check of whether your Windows install is legit, made when you download certain updates), and that's not counting the users who know how to totally circumvent WGA. Microsoft's plan is to reduce this fail rate by 5% over three years. But before you close down *Azureus*, it's not after you, because exchange of copied software over peer-to-peer networks isn't the target. It's after the Mr. Bigs, the people who supply counterfeits to knowing or unknowing vendors. This is the stuff that's hard to distinguish from the real thing, not a CD-R with '*Office 2003*' scrawled on it in felt tip.

An anti-piracy posse in London, including representatives from Microsoft, The Trading Standards

> ## "This is stuff that's hard to distinguish, not scrawled on a CD-R"

Institute and the Patents Office told us about Keep IT Real. They want to help you; to educate you so that you know how to tell kosher from counterfeit. They've even set up the website **www. howtotell.com/uk** to aid you in your education, complete with a extensive gallery of bootleg MS CDs, ranging from expert forgeries to hilarious bunkum.

Unsurprisingly, Microsoft also wants to offer help to victims of counterfeiters. And by 'help' we mean 'tell you where you can re-buy things you've already bought.' This approach is bound to be popular with Microsoft's trusted partners. But for anyone who's been duped into buying an illegal copy, all it offers is the opportunity to buy

the same thing twice. And Windows 98 owners who bought Windows ME already know how that feels.

ON THE ROAD

Microsoft is undertaking a tour of targeted cities including Huddersfield, Nottingham and Manchester, having already visited Glasgow and Middlesborough. Through visits to all local retailers selling MS products (presumably the PC equivalent having your collar felt), and press adverts, MS hopes to reduce the amount of counterfeit software sold by tracking down the suppliers.

As we've shown, the amount of money involved is pretty staggering. Indeed, it was suggested to us that the average profit to cost ratio in drug dealing is 10:1. In software counterfeiting it rises to 16:1. Bootleg copies of Windows: just say no.

HEARD THIS?

"My tax return in the United States has to be kept on a special computer because their normal computers can't deal with the numbers," says Bill Gates about the trials that accompany his morbidly obese fortune. Maybe the tax office should try Linux…

Movie Maker

Hollywood is about to collide with the MMO as the director of *Aliens* and *Titanic* makes plans to create an online RPG

James Cameron, legendary director of *Aliens*, the first two *Terminator* films and soppy disaster epic *Titanic*, has his visionary eye on the MMO market. He currently has a movie in production codenamed *Project 880*, and it has been reported that his plans for the IP extend beyond the box office. Cameron is on the board of Multiverse, a development house aimed at providing start-up studios with support in return for a cut of their game sales, and it looks like this familiarity with the industry has piqued his interest. *Project 880*, the MMO, will be available to play long

"His plans for the IP extend beyond just the box office"

before the movie hits the cinemas, drawing the potential audience into the world before revealing the plot.

Talking to **Businessweek.com**, Cameron says, "So much of sci-fi is about creating worlds that are rich and detailed, and make sense at a social level. We'll create a world for people and then later present a narrative in that world." Rumours that 'harsh language' will be one of the special skills go unfounded.

AMD Mac-10

Mexico City is the world's most populated city, and sadly also one of the most dangerous. Gun crime is rampant and violent crimes like carjacking and kidnap are common. One district has come up with a plan to reduce the number of firearms, though, by offering computers in a local gun-amnesty. An unnamed charitable organisation has donated 150 PCs to the district of Alvaro Obregón to exchange for guns.

What isn't clear is whether the computer you walk out with depends on what gun you walk in with. Will it be that Emilia Reyes only ends up getting a Celeron with integrated graphics for dropping off her father's antique duelling pistol, while a local gangsta with an AK-47 gets an FX-60?

Win! Movies for your PSP

If you consume films like popcorn, you can't afford to miss this.

As you probably well know, PCFormat loves to watch video on the go, and for some of us, Sony's excellent PSP is our portable media player of choice. The big, pin-sharp screen is still one of the best ways to enjoy films on the move, and the high contrast and brightness mean that justice is done to even the most visually inspiring of movies.

Luckily the range of blockbusters on the PSP's Universal Media Disc format is increasing by the day, and another clutch has just arrived. Speed, Aliens, There's Something About Mary, Independence Day and Behind Enemy Lines are available to buy on UMD on 27th March from 20th Century Fox Home Entertainment.

Thanks to the generous types at Fox we've managed to get our hands on a few sets of these five portable pleasures, worth a total of £240, and we're happy to furnish three lucky readers with a new collection of movies that won't restrict their nomadic urges.

Watch Speed on a bus, Phonebooth in a phone booth, Aliens in the company of your in-laws – whatever takes your fancy. To be in with a chance of winning this fabulous prize, head on over to www.pcformat.co.uk/competition and answer this question:

What does UMD stand for?

a) Universal Media Disc
b) Unidirectional Monitored Disc
c) Understanding Melancholy Dinosaurs

Terms and conditions are on the website.

Is the flesh no longer weak?

It's not just the beauty that's skin deep…

The world of cybernetic implants and JC Denton-esque in-head transmissions moved a step closer to fruition recently. Scientists in Korea have released a prototype implant that allows an iPod Nano and a pair of earphones to be connected via your own soft, pink humanflesh. Unveiled at the International Solid State Circuits Conference in San Francisco, the chip is placed under the skin of the forearm, and uses the body's ability to send electric signals to transmit music. Unfortunately the cyborg in question must keep a finger pressed to the iPod to complete the circuit loop, but these are mere trivialities if the promised 2Mbs per second bandwidth and 10 Microwatt power consumption materialise. The current prototype, which was built by the Korean Advanced Institute of Science and Technology, isn't operational, but the claims made in the presentation are radical enough to have piqued the interest of visitors to the conference.

How keen people would be to undergo an implant simply to listen to music without trailing wires is unknown (perhaps if the chip is encased in white plastic it would be popular), but what is clear is the inherent potential. It can't be long before we see contact lenses that display video output and other smart uses of the technology. You won't find us first in the queue to get a USB jack implanted in our skulls, though.

If you stick your finger in a plug socket, maybe you can charge the Nano too. No don't try that at home…

NEWS IN BRIEF

Stewie Griffin chats
The morally ambiguous baby from the animation series *Family Guy* is to get his very own part in an online chat show. Co-hosting with Brian the Dog in *Up Late with Stewie and Brian*, the show will be aired on the official website **www.familyguy.com**, and other News Corp-owned sites later this year.

WoW bans gay guild recruiting
Sara Andrews was surprised to find her GLBT (gay, lesbian, bisexual, transgender) friendly guild was being banned from recruiting fellow gamers in *World of Warcraft*. Blizzard claimed that her actions might constitute harassment, as it may "incite certain responses in other players that will allow for discussion that we feel has no place in our game." Blizzard later withdrew the restriction and apologised to Andrews.

Bad Curry
The Advertising Standards Authority has upheld a complaint levelled at DSG, owner of the Dixons and Currys high street chains. The ad stated that a Compaq PC with the latest 64-bit AMD processor would be available for just £499. Needless to say, this wasn't the Athlon 64 FX-57, which at the time was the latest 64-bit AMD chip. The ASA said in its ruling that DSG should not repeat the claim in its next campaign.

I am a blasphemer
AOL is in hot water in the States over a new slogan for its IM service, 'I AM'. Ian Millar, an AIM user, pointed out to the company that 'I AM' is a translation of Yahweh, the Hebrew name that God gave himself in Exodus. God declined to comment but Millar warned that "His patience with the mockery of mankind will finally come to an end."

QUOTE!
"I'd say we can expect a product to be on the market in four to five years." Michael Thomas, of Colossal Storage, puts a time scale on the firm's 1.2 petabyte (1,000 terabyte) hard drives.

Fake forumites

Are trusted posters really corporate plants?

Surely if information wants to be free, then it heads for an internet forum: a place of mutual enlightenment, free data-sharing and pre-school grammar. While we know that the truth is often skewed by opinion, we generally trust the views of long-term posters. However, news site *The Consumerist* recently reported allegations that a major graphics card firm was seeding fansites with PRs who were paid to pose as forumites, win the trust of their 'peers', then go about bigging up the products.

POSTAL SERVICE
The company in question strenuously denies the accusations, and at the time of writing there is no concrete evidence. Nevertheless the story continues to grow, with unsubstantiated claims that some forumites were given free hardware in exchange for making pro-company posts. A spokesperson from the accused firm responded by saying, "These members were not 'paid in hardware' but sent hardware to give us feedback, positive or negative, regarding their experience with it. They were never told what to say, nor did they sign any document forbidding them to discuss their relationship with [us]."

Even if the accused firm is squeaky-clean, these sorts of tactics seem to be employed by others. A *Penny Arcade* forumite recently claimed that he had been interviewed for a job with a 'guerilla' marketing agency in San Francisco. He says their strategy was to hire posters posing as fanboys in order to build trust over time, before disseminating carefully-worded pro-product posts. Had he accepted, he claims he'd have been required to create up to 100 distinct identities, writing five posts an hour on various sites.

In the age of viral marketing, the existence of such tactics doesn't come as a complete surprise, but it's still disturbing. The web is increasingly the first port of call for information these days, and not knowing if you're hearing a critical opinion or the company line undermines that in a big way.

Who is the face behind the glowing forum post?

Picture © Getty

Jeremy Laird
STANDING ON PLATFORMS

Making some sense of all this Viiv hoohah

Is it a platform à la Centrino? A content distribution system to take on iTunes? Or just a branding exercise? What the hell is Intel's Viiv? Sorry, but I haven't the foggiest. And that's despite the fact I've attended a swanky London party for which Intel ponied up God-knows-how-much moolah to have Jonathan Ross and Michael Owen sing its praises. Or maybe it's because of that fact.

In terms of technology, Viiv is no great shakes, comprising any of Intel's current dual core chips with a compatible Intel chipset and Microsoft's Media Center Edition of XP. However, one thing is for sure. Intel is claiming the earth. Viiv will deliver everything from on-demand video and the latest games for download to idiot-proof digital media management and user friendly networking. That's right, Intel not only reckons it can convince the major motion picture studios to hand over their back catalogues to the digital rabble. It also believes it can deliver configuration-free wireless networking that "just works." Good luck!

Gearedup
THE HARDWARE ON OUR MOST WANTED LIST

Mini media
Asus' first Core Duo motherboard is a micro ATX model. Standard ATX units are likely to follow. However, this particular board is fully Intel Viiv compliant. Cue much rejoicing.
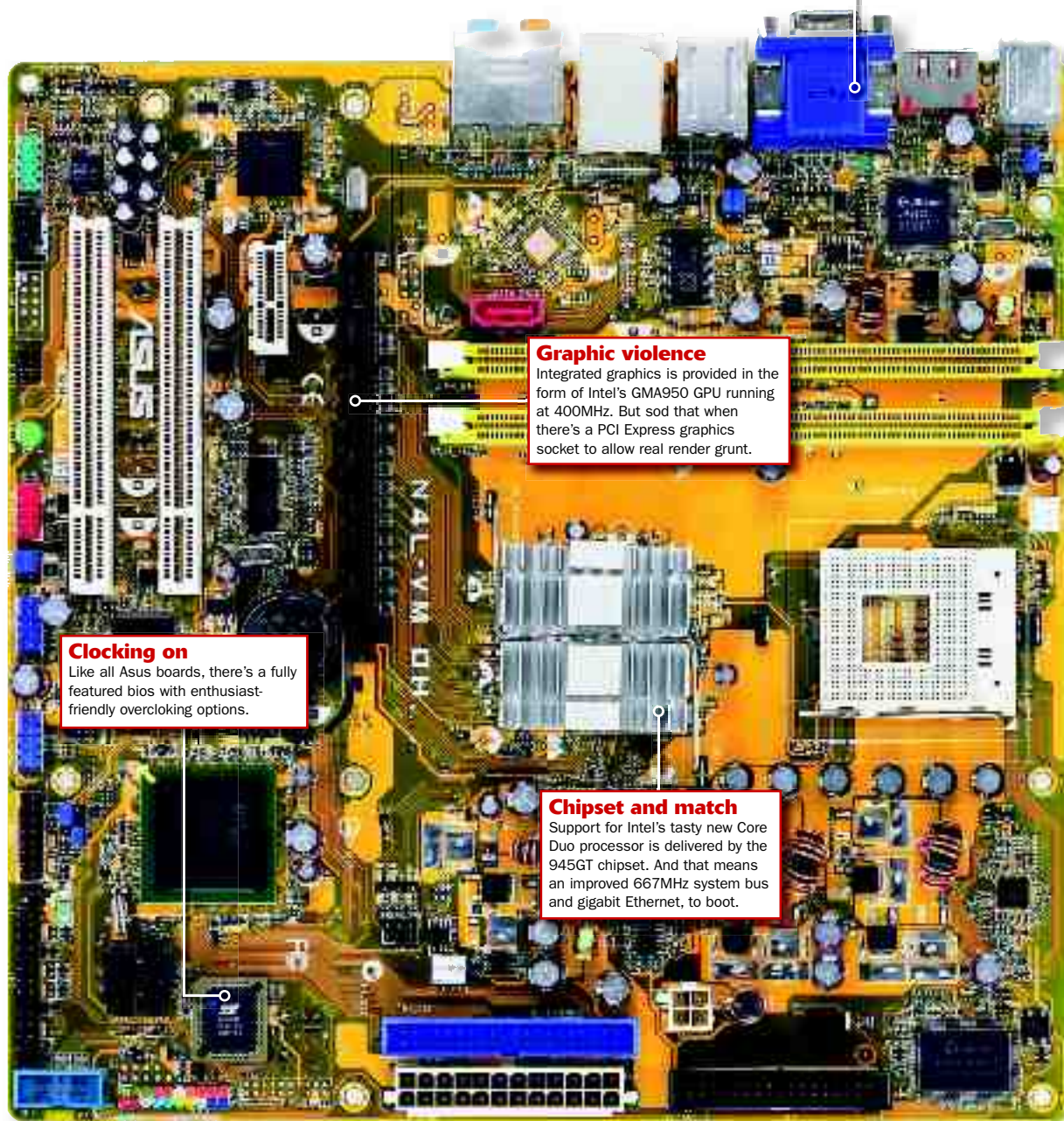
Graphic violence
Integrated graphics is provided in the form of Intel's GMA950 GPU running at 400MHz. But sod that when there's a PCI Express graphics socket to allow real render grunt.

Clocking on
Like all Asus boards, there's a fully featured bios with enthusiast-friendly overcloking options.

Chipset and match
Support for Intel's tasty new Core Duo processor is delivered by the 945GT chipset. And that means an improved 667MHz system bus and gigabit Ethernet, to boot.

Daring duo
Asus N4L-VM DH
Price £TBA **Available** Spring **Web** www.asus.com

Desktop Pentium M almost literally blew our brains out. It proved you could have top-drawer gaming performance in a cool and quiet package. But it wasn't the perfect all-round solution. A single high-definition video stream, for instance, is more than it can handle. Give it up, therefore, for the first desktop motherboard capable of supporting Intel's new Core Duo mobile chip. Surely, this represents the ultimate no-compromise solution to all your lifestyle PC needs. Specifically, with Core Duo on board, the Asus N4L-VM DH promises to deliver great gaming performance courtesy of a PCI Express graphics port, while seriously upping the ante in most other departments compared with Pentium M thanks to awesome multi-threaded grunt and improved bus speeds. High-definition H.264 decoding from a virtually silent box? That'll be the Asus N4L-VM DH. **Efficient**

Mahogany memory
➔ **Lexon Hardwood USB**
Price £TBA **Available** Spring **Web** www.lexon-design.com

Multifunction memory sticks have sprouted so many ancillary features, the next logical step is for a manufacturer to bring the entire enterprise full circle by releasing a memory stick with an integrated memory stick on board. Think memory stick^2. Well, that's not quite what this range of flash memory sticks represents. But by fashioning the most ubiquitous PC-compatible component in Christendom from high-quality hardwood, Lexon is not only casually contributing to South American deforestation on a very small scale, but has also created world's first memory stick, er, stick! Stick^2 lives! **Rustic**
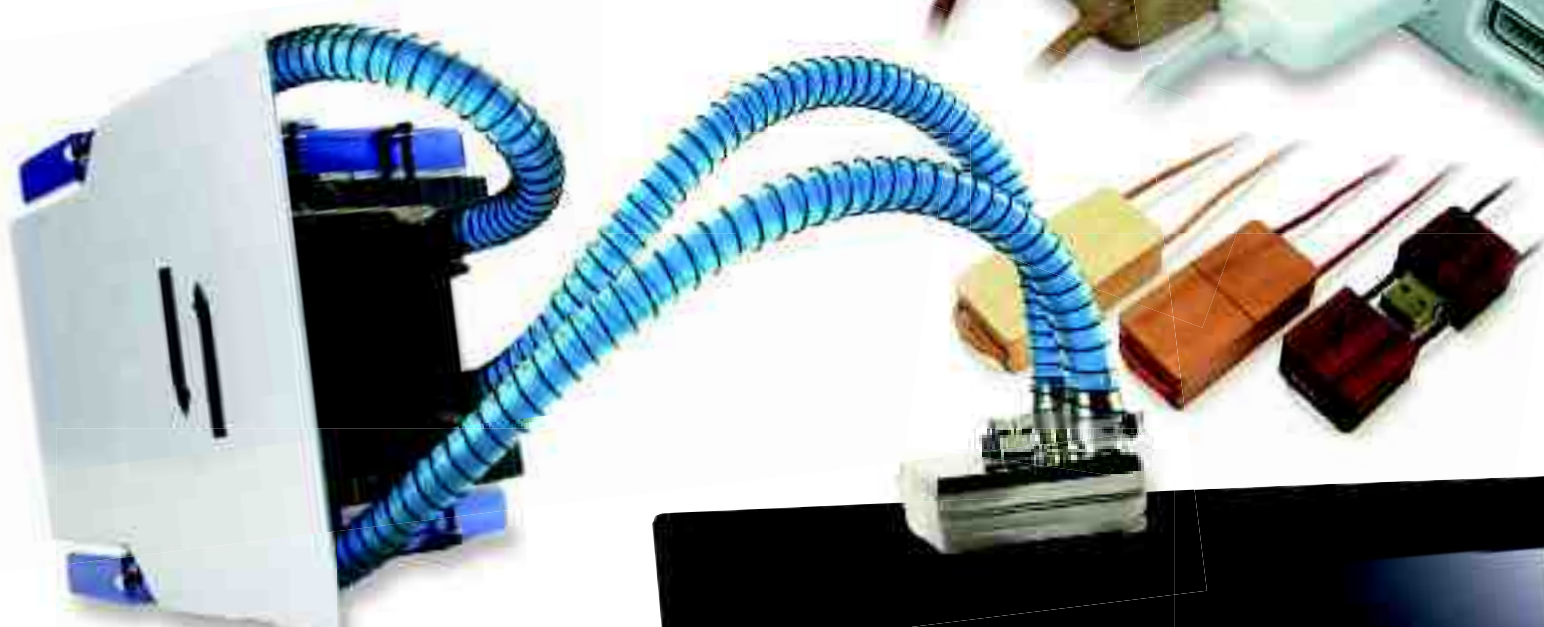
Cool water
⬆ **CoolIT Freezone**
Price £199 **Available** Now **Web** www.savrow.com

Do-it-yourself rig building is all very well. But if you're so lazy you sometimes wonder whether breathing is worth the bother, CoolIT has the perfect water cooling system for you. The Freezone comes fully assembled and factory configured with a closed loop system. You don't, in other words, need to fill it up with coolant upon assembly and won't ever need to top it up thereafter. Just hook up the heat plate to your processor and plug the main unit into any ATX tower system for simple, silent but extremely effective cooling. Thanks to multiple thermal electric coolers, along with active CPU temperature control, CoolIT reckons the Freezone is around twice as efficient as the competition, as well as being just a little bit quieter. **Tubular**

Sturdy screen
⬇ **Asus PW191**
Price £299 **Available** Now **Web** www.asus.com

Asus is a purveyor of all manner of tasty PC-related kit, from top-notch SLI motherboards and graphics cards in many flavours to swanky Asus-branded notebooks and even the odd Apple Powerbook, too. Until recently, however, Asus had given the cutthroat LCD market in the UK a miss. But it's weighing in at last with this stylish 19-incher. Like most of the Taiwanese outfit's products, this is no plastic fantastic embarrassment with catflap-in-a-tornado build quality. In fact, with a high quality chassis that offers height and rotate adjustability, DVI and VGA connectivity and a "zero bright dot" guarantee, it's up there with Sony among the fancier LCD fenêtres around. Our only reservation involves the res. Is 1,440x900 pixels enough? **Solid effort**

Micro media
⬅ **Shuttle SD36G5M**
Price £320 **Available** Now **Web** www.shuttle.com

Shuttles here, Shuttles there, Shuttles bally everywhere. Given the array of boxes Shuttle bashes out, we'll forgive you if yet another breadbin relieves you of the will to live. Stop sharpening that disembowelling cutlass for just a moment, though, because this latest offering doesn't just combine Shuttle's sexiest chassis (the G5) with that funky VPD front panel display. It's also fully Intel Viiv compliant. So, that means Intel's latest 945 chipset with H.264-crushing dual-core compatibility, support for DDR2 memory in 667MHz dual-channel trim and a choice of drop-in PCI Express graphics or Intel's no-frills GMA 950 integrated chip. It's the perfect basis for an Intel-powered media PC and far closer to the Viiv philosophy than a honking great desktop box. **Minimalist**

Frontend

Beamed screen

← **InFocus ScreenPlay 5000**
Price £747 **Available** Now **Web** www.projector-discount.co.uk

High-definition video is the way, the truth and the light. Problem is, a decent high-definition TV is still an awfully pricy proposition. But don't despair: recently, the prices of a number of HD-capable projectors have fallen to seriously attractive levels. How about a cinema-tastic, fully 720p compliant native resolution of 1,280x720 pixels, a reasonable 1,200 to 1 contrast ratio and a brightness rating of 1,100 lumens? And all for around £750. It also sports DVI, component and S-Video inputs. What's more, the damn thing is even HDCP encryption-compliant and therefore ready for your Blu-ray drive and Vista PC. The only thing the InFocus ScreenPlay 5000 lacks is the arguably more film-friendly DLP technology. But more to the point, it will deliver a home cinema experience that beats any LCD or rear-projection TV with an exceedingly large stick. **Light of your life**

Three alternatives…

Hitachi PJ-TX200
➔ Price £1,100 **Available** Now
Web www.hitachi.co.uk

Hitachi's latest 720p LCD unit packs some fancy lamp modulation tech that results in a massive 7,000 to 1 contrast ratio. Those who talk about the death of LCD, take note.

BenQ PE7700
➔ Price £1,500 **Available** Now
Web www.benq.co.uk

720p DLP technology with a contrast ratio of 2,500:1. A couple of years ago, this sort of high-end performance projector would have cost you far more cash.

Canon Xeed SX50
➔ Price £2,200 **Available** Now
Web www.canon.co.uk

With a native res of 1,400x1,050 pixels, this LCOS-powered projector boasts twice as many pixels as an XGA unit. The ultimate projector for gaming?

ANALYSIS

WHAT WILL INTEL'S ANNUAL TECHNOLOGY JAMBOREE BRING IN 2006?

➔ The Intel Developer Forum Spring 2006, which will have happened by the time you read this, is all about The Next Generation Micro Architecture, or NGMA. We have a good idea of most of what Intel will be dishing out, even before the throng of international press corps has braved the cattle-class flight to San Fran, but expect a full report next month.

Conroe and Merom are the well-known code names for Intel's next desktop and mobile offerings, respectively. Both chips are based on the same so-called unified architecture. No longer will Intel's desktop and notebook chips be based on separate CPU cores. Intel has also let it be known the new architecture ups the three-issue-wide design of both the Pentium 4 and Pentium M chip to four issues for NGMA. In theory, that will allow NGMA chips to do more work per cycle and therefore go toe-to-toe with AMD's Athlon 64 CPUs for both the outright performance crown and perform-per-Watt bragging rights.

Bus speeds on the new desktop chips could scale as high as 1,333MHz, but will reach at least 1,066MHz at launch, with core clocks topping out at around 3GHz. On-die cache memory, meanwhile, will max out at 4MB. As for the Merom mobile chip, expect core clocks to reach up to 2.33GHz and a system bus frequency of 667MHz. The other significant spec highlight will be shared L2 cache. First seen on the Core Duo laptop CPU, this shared cache is to compensate for Intel's great Achilles heel: the ancient northbridge-based FSB and memory controller. Shared cache means no coherency calls and therefore less traffic.

Question is, will all this be enough to put Intel's desktop CPUs back in pole position? In a word, no. Until Intel dumps the

Intel hopes that its new chips will stick it to AMD, but *PCF* isn't so sure.

FSB and matches AMD with an integrated memory controller, we reckon the best hardcore Intel devotees can hope for is performance parity. And just for the record, that's unlikely to happen until the arrival of Intel's Common highspeed Serial Interconnect (CSI) some time in 2008.

Games latest

NEWS FROM GAMING'S FRONT LINE

James Carey
SPRING CLEANED

Ripped straight from newspaper front pages…

It's one thing to enjoy playing soldiers in a fictional version of the Middle East, quite another to emulate the assault on Falluja while one's taking place in the real world. Just as some of the big games this year start to move away from WW2 and modern warfare to the realms of sci-fi, smaller titles circle like vultures over the news of the day. Both War On Terror and Ghost Wars will bring players street-level combat this year, the former complete with recognisable city landmarks and locations. But how much do you want to blow up Canterbury cathedral? Do you really want the real world in your games? Isn't that what we're trying to escape from? That said, I suppose if we weren't fighting digital terrorists they'd only be virtual Russians, or Nazis, or robot pirates, and what's the difference? I play games to get away from it all, to be carried away in a story like Half-Life 2 (especially now they're officially 'episodes') or off creating my own narrative in MMOs. I don't play games to be reminded of the often ugly events of the day. And I'm sure I'm not the only one.

Halo 2 will be part of the first wave of Vista-only games. And so it begins…

Halo 2
Microsoft says Halo to Vista, but will gamers say goodbye?

DUE DATE Winter
PUBLISHER Microsoft
DEVELOPER Microsoft Games
WEB www.bungie.net/games/halo2

Conspiracy hats on: the PC version of *Halo 2* will be coded exclusively for Vista. Bungie, the original creator, is too busy with *Halo 3*, so it's taking a consultancy role while MS develops *Halo 2* in-house. Both companies

"82% of PCF readers won't buy Vista until it's absolutely necessary"

are desperate to convince a sceptical public that such exclusivity is down to a "commitment to quality" rather than marketing.

Bungie is trying to absolve itself of any blame. On its website, amid a barrage of 'OMG, Dude!s' alleging that Microsoft will have released Vista by the time the game is complete. Bungie argues that it wants to work with the new OS, saying "Microsoft will take full advantage of our game."

How's that for a loaded statement? Trying to assure gamers that Microsoft's intentions are pure while acknowledging that MS is using the title to boost Vista sales? You decide.

Microsoft knows that such statements always create a backlash from gamers, who don't want to be pushed into upgrading their systems straight away.

We doubt that fears of a poor take-up of the new OS would lead the corporation to see game exclusivity as a sales booster for Vista, but there's an interesting angle here. In a recent *PCF* survey, 82% of our readers said that they weren't going to buy Vista until it was absolutely necessary. By then, a two year-old game is hardly likely to increase OS sales, but it does set a unwelcome precedent. A year down the line,

do you really want to be forced to upgrade your operating system to play the latest games?

GOSSIP!

"That game's not on Eidos' PAL release schedule." Eidos claims the UK will never see a 50 Cent: 25 to Life game. PCF's not buying it, and forsees a release. Though we hope not.

Fallen angel
Microsoft's grand fromage wades in…

With Bungie refusing to give out any details about Halo 3, including a release date (the developer is still referring to it as 'ONP,' or 'Our Next Project') who else but Bill Gates should step into the breach? Time magazine quoted him last summer as saying that "The day Sony launches [PlayStation 3], it will walk right into Halo 3." He recently backtracked on tech site Engadget, saying "it's up to the team when [it wants] to ship [Halo 3], and it's going to take its time to make a super great product." Super.

Halo 3 has some seriously powerful fans, it seems…

Medal of Honor Airborne

Decorated WW2 franchise finally earns its wings

DUE DATE Winter **PUBLISHER** EA
DEVELOPER In-house **WEB** www.moh.ea.com

Since **Allied Assault cashed** in so sublimely on *Saving Private Ryan*, it seems fitting that the latest instalment of the *Medal of Honor* saga, *Airborne*, takes its cues from that other WW2 epic, *Band of Brothers*. Every World War 2 shooter and its dogtags has now chronicled the exploits of the 101st, the 82nd and their paratrooper brethren, but the *Medal* series still holds a certain caché, setting the benchmark with earlier titles. So as *Allied Assault's* Omaha Beach setpiece was equal to *Ryan's*, EA hopes *Airborne* will capture the tension and disorganisation that characterised the massive paratrooper drop into France on June 5th, 1944.

Each mission will begin with an airdrop, and you'll have to pilot your 'chute to the ground manually, your landing position therefore drastically altering the way every open-plan, free-roaming level plays out. It's a new direction for the series, which has previously stood on the strength of its scripted set pieces. A go-anywhere, do-anything approach to level design will be totally new to the team, and if they can pull it off, totally refreshing for us. That WW2 back story is starting to get a little tired though, we reckon. With new episodes of *Half-Life*, *Huxley*, *Prey* and, let's not forget, *Quake Wars* on the horizon, will another Normandy based epic fit in?

Airborne should make *Allied Assualt* look like a day trip to the seaside.

> "Go-anywhere, do-anything level design will be a totally new experience"

in the pipeline

A choice selection of games still ripening on the development vine

SPRING

Condemned: Criminal Origins
Time to get all Clarice Starling on some mean ol' serial killers. The award-winning Xbox 360 title is finding its way onto the PC, with all the tense, psychological thriller elements that made it a hit.
www.condemnedgame.com

SPRING

Rebel Raiders: Operation Nighthawk
Relive those 50p-sapping *Afterburner* days with this futuristic air combat beast. Acting in the best Rebel Alliance fashion, you'll be blowing stuff up over land, sea and possibly even space stations too.
www.rebelraiders.com

Hearts of Iron II: Doomsday
This expansion extends the alternative timeline to 1953, adding in historical scenarios like the Israel conflict. You'll also now have access to the big red button of tactical nukes.
www.paradoxplaza.com

APRIL

MMOG Log

The latest news from the world of clans, LANs and highly obedient gryphons

It's a MMO frenzy out there at the moment. As **Auto Assault** goes into the final stages before release, *PCFormat* has been in the driving seat, taking part in some of the most action-oriented MMO gaming we've ever seen. Name us another MMO where you can barrel through a gang of mutants at 60MPH, guns blazing, and see them scatter like so many physics-enabled bowling pins? Ooh, it's gonna be good.

Both **D&D Online** and **RF Online** have finally been let lose in the wild (see our reviews on pages 86 and 94 respectively for the verdict), so if your world of choice is starting to look a little samey, it may be time to move planet. A quick flick over to p28 will reveal tantalising details of the new **Guild Wars** expansion, **Factions**. AreaNet and NCSoft are running a massive preview event starting on the 24th March for the expansion, open to both pre-order customers and basic **GW** account holders, so get over to **www.guildwars.com** if you're either.

Spring is a busy time in fantasy land. James Cameron is having a pop at an MMO to promote his new flick (see p.19 for details) and there's some new **Huxley** imagery around too. Check out this month's coverdisc for a hi-res video and a gallery.

Come on, who doesn't fancy scary spider women?

War on Terror
Terrorise this, digital evildoers…

DUE DATE April
PUBLISHER Monte Cristo
DEVELOPER Digital Reality
WEB www.waronterror.de

It's another modern RTS based in the so-close-you-can-smell-it future. The instantly familiar point-and-click romp puts you in control of three factions, a typically Western alliance, a generically Middle Eastern faction and – what's this? A Chinese army? Now *there's* something new. Sigh.

Tearing through real-world towns, complete with cathedrals and instantly recogniseable tourist attractions in stolen camper vans is a highly entertaining addition though, since you can nick any vehicle that takes your fancy along the way. The viewpoint is still rather restrictive, though. Even though it can be moved around, it can't zoom out enough to be able to make any solid tactical decisions. But If you've the desire to play out the nightly BBC news report of Western atrocities in far-flung places, this could scratch your itch.

Pacific Storm
Zeros, bogies and naval-gazing nonsense

DUE DATE May
PUBLISHER Buka
DEVELOPER Lesta Studio
WEB www.pacificstorm.net

Much of the sympathy generated by the Japanese attack on Pearl Harbour was torpedoed by the movie of the same name. Buka's latest game is an attempt to right that wrong, and puts you in the middle of WW2's Pacific Theatre.

This is a fully fledged RTS, with all the point-and-click command you'd expect, but here you can jump into any one of the myriad fighter planes and vessels to control them yourself, *Battlefield*-style. Everything from prop-driven planes to aircraft carriers is yours to play with, or if you'd rather you

Taking down the Nazis never gets old.

can take command of a squadron. If that's not enough, you can become the Commander-in-Chief, responsible for the entire outcome of the war. This mixture of arcade, RTS and turn-based strategy, plus the added bonus of a nuclear weapon upgrade, could make this the most thorough Pacific title to date.

APRIL

Rogue Trooper
The little-known, psychopathic fourth member of the Blue Man Group goes rogue in the game based around *2000AD*'s hero. A *Splinter Cell*-esque approach has given us hope that it'll outdo the turgid Judge Dredd FPS, *Dredd vs. Death*, from a couple of years back.
www.roguetrooper.com

FUEL
Is the offroad genre running on empty? On the face of it, *FUEL* seems to be yet another ATV racer in a sorry history of 'hi-octane' driving pulp. Jet-skis and quad-bikes are all well and good, but nothing we didn't see four years ago…
www.fuelrace.com

FlatOut 2
Replace 'Flat' with 'Burn' and you get an idea of where this arcade racer is going. As it's a sequel, there's twice the tracks, twice the cars and twice as many mini-games.
www.bugbeargames.com/flatout2

MAY

GTR2
Mirror, signal, floor it

DUE Summer
PUBLISHER 10tacle Studios
DEVELOPER SimBin Development
WEB www.10tacle.com/gtr-game

SimBin's GTR was one of the surprise success stories of last year, a super-fast and accurate racing simulator that mixed petrolhead-pleasing realism with instant accessibility. The sequel promises impressively beefed-up graphics and DX9 compatibility, as well as an improved physics engine. There'll also be over 140 fully licensed cars and around 30 real tracks, including a selection of historical circuits for those nostalgic powersliding moments.

SimBin has added in a few new events, in particular the full Proximus 24H experience; the Belgian equivalent of Le Mans or Daytona. It's a four-day event set at the demanding and exhilarating Spa Francorchamps circuit, culminating in a 24-hour race. We're promised a realistic day/night cycle, dynamic weather and changing track conditions. As opposed to the original's occasionally stilted vision of GT racing, this should offer a fluid and almost surreally gruelling driving experience.

Allied to this is the improved LiveTrack technology that runs throughout the game. This recreates the way the track degenerates over time as more dirt and rubbery detritus builds up during a race. This is represented visually as well as physically, changing how the car handles as you battle it out on the track.

Languishing back here doesn't win championships. We suggest you try the pedal on the right.

JUNE

Heart of Empire: Rome
Or *Sim Rome Tycoon*, if you will. Charged with building up the ancient city, you have to look after your citizens, but the hook is gladiatorial combat. Organising games and pitting slave against slave appeals to *PCFormat*'s inner Caligula.
www.heartofempire.com

Test Drive Unlimited
Atari is looking to revolutionise the racing genre with the first 'MOOR'. That's Massively Open Online Racer to you. We're promised a world which allows 1.000 players to inhabit the same 1,000 miles of Hawaiian island roads simultaneously.
www.testdriveunlimited.com

SUMMER

SEPTEMBER

Darkstar One
A story-driven space jaunt that also gives you a vast universe to explore outside of the core storyline. Extensive upgrades to your mysterious ship allow you to approach the game differently each time.
www.darkstar-one.com

Full Spectrum Warrior **Ten Hammers**

This is my rifle, this is my gun…

DUE DATE April
PUBLISHER THQ
DEVELOPER Pandemic
WEB www.fullspectrumwarrior.com

There's something slightly uncomfortable about titles that are obviously based in current war zones, where people are really dying every day. This doesn't seem to have hindered their success, though: *Full Spectrum Warrior* arrived barely a few years into the current Iraqi 'troubles'.

This sequel is full of the same all-American 'insurgent' slaying, but now things have got a lot tougher for your troops. Previously, you were pitted against just a few enemies at a time, but in *Ten Hammers* you find yourself under heavy fire from the off. The AI has improved noticeably, with your foe moving regularly between cover points to avoid getting pinned down.

Your boys have got a few new tricks, too. The team leader can now use his scope to pick off tricky little blighters cowering under cover, so long as you don't dawdle and get his nose shot off. There's also no need to constantly swap between squads as you can issue orders to both through one sergeant. It all makes for a deeper tactical challenge, especially once the mechanised vehicles come under your control.

Ten Hammers boasts improved squad control.

Guild Wars **Factions**

Whose side are you on?

We've returned to *Guild Wars* here at *PCF* over the past few weeks, in sweaty palmed anticipation of the upcoming *Factions* release. It's promised that the long-awaited expansion will turn *Guild Wars* into the *Eve Online* of fantasy MMOs, creating not only new classes with Assassins and Ritualists but more importantly bringing Alliance warfare to the old world of Tyria and the brand new land of Cantha. Guilds will now be able to band together to form alliances, as in *Eve*, and members will be able to visit other guilds' halls, presumably to marvel at the work they've done with the architraves.

These alliances will then be able to pick a faction (or 'side', as they used to be known) and battle alliances from the other faction in massive PvP wars, on special Battle Islands, for control of actual terrain in the new world of Cantha. These territories will impart their ruling alliance with special items and skills, so there's a reason to perceive the land you control as a great deal more than real estate. Guilds can also join together to form powerful alliances. Allied guilds share alliance-only chat to discuss tactics, and can visit each other in-game. Alliances can also gain control of cities and towns in Cantha by participating in Alliance Missions, which give them the ability to trigger events and gain access to exclusive areas of the game. A player controlled world is the holy grail of MMOs – this is one faction we'll sign up to.
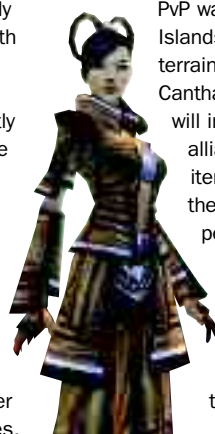
Two guilds are better than one.

GOSSIP!

"I'm stoked to be working with Ubisoft!" No sooner is Shaun White out of the snowboarding halfpipe in Torino with a gold medal than Ubi snaps him up for a game licence.

AUTUMN

Warhammer: Mark of Chaos
Focusing on the conflict aspects of the real-time strategy genre, rather than traditionally tedious micro-management tasks like sourcing supplies and base-building, *Mark of Chaos* promises epic battles and large, dynamic environments like swampland and forests.
www.namco.com/games/warhammer
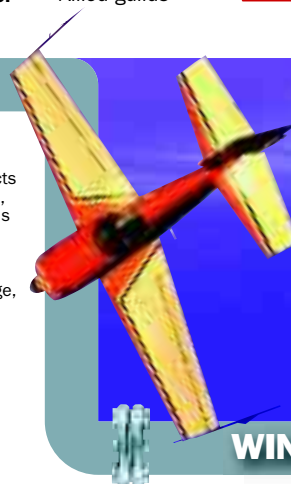
Flight Simulator X
The tenth instalment of the hugely successful plane sim is to be fully optimised for Windows Vista and will offer 55 missions and an insane 24,000 airports.
www.microsoft.com/games/pc/flightsimulatorx.aspx

WINTER

Jim Rossignol
PNEUMATIC GIMP

Watchthisspace

THE FUTURE IS HERE. JIM ROSSIGNOL HANGS ON

Ready for rocket racing?

High-speed sky rally announces its first pilots

With the prototypes in the air, the latest X-Prize looks set to rock the world.

What was little more than a sci-fi dream 18 months ago is now a reality: like videogames made flesh, the Rocket Racing League now has its first racing craft, and its first pilots.

Robert 'Bobaloo' Rickard and Don 'Dagger' Grantham, Jr are the first two men who have announced that they will compete in the aerial league, and both are veteran F-16 pilots. As professional aviators, they will be familiar with military flight simulators, and should be at home with the 'augmented-reality' setup in which the rocket races will fly. The Mojave Desert track over which the pilots will race is to be overlaid by virtual 3D hoops, generated in the pilot's visors. This will create an experience like the tutorial levels in flying games such as *Crimson Skies* - for real. The pilots will have to fly through the computer-generated hoops if they intend to stay on track and win a rocket race.

Pilots will fly the Mark 1 X-Racers, which are small rocket craft based on the tried and tested XCOR Aerospace EZ-Rocket (pictured). These tiny craft burn liquid rocket fuel that should leave spectacular plumes of flame in their wake – a fact that should make the rocket races even more videogame-like to watch than previous air-based racing leagues.

The league is scheduled to kick off in early 2007, with a $1m prize on offer, provided by the X-Prize Foundation. The X-Prize was set up to encourage amateur aeronautics, and was also responsible for the competition to get the first private craft into orbit – a competition into which *Doom* programmer John Carmack made an entry. Whether any videogame moguls will attempt to make an entry into the Rocket Racing league has yet to be confirmed.
www.rocketracingleague.com

Self-parking car created

Computerised driving aids and other in-car labour-saving technologies will soon mean that we barely have to drive at all. Siemens VDO has created a in-car system that will not only perform tricky parallel parking, but will also use simple form of radar to scan the street and find a spot to park. Siemens will soon be putting a thermal imaging HUD for night-time driving on the market, as well as delivering a cruise-control system that maintains a steady distance from the car in front at all times.
www. siemensvdo. com

This month in
Science
April, 1953

On the 25th April 1953, two British scientists discovered the structure of DNA. James D Watson and Francis Crick made the breakthrough that revolutionised genetics whilst Crick was under the influence of LSD.

Bionic retina

Battery-powered optical implants greenlighted

American scientists are working on creating a bionic retina (the light sensitive membrane at the back of the eyeball) as part of a major project to help defeat blindness. Integral to this project is the capacity to power the tiny embedded device, and a team at the Sandia National Laboratory in New Mexico is developing a suitably miniscule battery.

Susan Rempe, the key researcher in the team explained that the team needed to understand how electricity operates within the cells of living creatures, such as the infamous electric eel, in order to create a bionic battery of their own: "This information will give us a better understanding of how power is naturally created in biological organisms – information to be used for designing and building the nanobattery."

Of course, once the nanobattery and bionic retina have been developed, the same nanotech can be used to power other embedded devices that could both aid medicine and transform us into a nightmarish hybrid race of part-man, part machine, electric eel monsters. Or something. Whatever the result, it's going to make the next hundred years of nanotech a vital technology to understand. **www.sandia.gov**

US scientists are going to fix your eyes with tiny batteries derived from eels. Yeesh.

Thewebpages

NET-BASED NEWS AND NONSENSE

Industry analysts blame the Amazon Prime service for the company's woes.
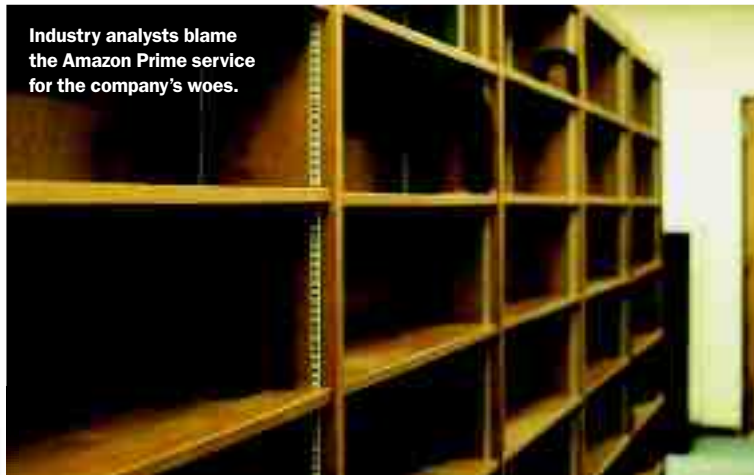
Picture Getty

Is Amazon's online empire crumbling?
The internet shopping giant's profits are down. Where will it go from here?

Dips in share prices, and missed profit targets, mean interesting times for online shopping behemoth Amazon. A few years ago it would have been impossible to believe that the web-based bookstore would be announcing disappointment in $2.54 billion (£1.46 billion) of sales, falling short of a forecasted $3.08 billion (£1.77 billion). And these figures are released at the same time as the website's search engine division, A9, announces the departure of CEO Udi Manber, heading over to the greener pastures of Google.

Long gone are the days of Amazon maintaining any notion of being a bookseller. Books are now but one small sliver of the products available. Having recently added musical instruments, cosmetics, car parts and gourmet foods to its range, there's very little that can't be bought from the etailer. Second only to eBay, Wall Street wonders if Amazon's recent financial woes might be due in part to

Ghost rides
DEFUNCT PARKS
There's a wealth of deceased theme park-related material well worth investigating here. Chronicling long-obsolete amusement parks in the United States, these stand as detailed obituaries to relics of a bygone age of family entertainment.

Capturing our interest is Magic Harbor, billed as a "British Amusement Park" in Myrtle Beach, South Carolina. A remarkable park, originally with with a Wild West theme, deaths and murders haunted it for two generations, until the owners of Blackpool Pleasure Beach bought it and converted into a celebration of British life.

Sadly this had no more luck, and soon a customer was killed on a rollercoaster. One more failed attempt on the lot, and the whole thing was been bulldozed. Many more stories exist in the site's archives.
www.defunctparks.com

Anarchism
NEGATIVLAND
Long before bootlegging and cut-ups, Negativland were outdoing anything your Ozymyzos might have managed. The group have been 'stealing' samples for three decades. Their website is a showcase for some of their most remarkable finds.

The new Listen Here section contains their focus on corruption in the commercial radio industry, as well as their mischievous humour, with outtakes of famous radio names saying deeply offensive things, and the spectacular collapse of the career of Roy Storey, live on air.

There's also their 'remix' of Mel Gibson's movie, The Mashin' of the Christ, available via Bittorrent and p2p networks, as well as info on their 25th anniversary album, No Business, which contains 100% sampled sounds.
www.negativland.com/listenhere

Quizzical
FILMWISE: INVISIBLES
Self-described "wunderkind masterminds" Brian Kirk and Jim Balquist started their website in 1999, as a place to publicise their self-penned film quizzes. The challenge is to recognise movies from a single screenshot – a premise that over time has grown in complexity.

Currently the site's most popular challenges are the Invisibles – screenshots from films with all the humans removed, but everything else left just as it is. The characters' clothes, jewellery and any items they were holding stay in each shot, thanks to some impressive Photoshop skills. The Boyz, as they refer to themselves, are skilled in making just the right choice of screenshot, to convincing you that you know what it is, but dammit all, can't quite put your finger on it.
www.filmwise.com

a new service the company is offering in the United States known as Amazon Prime. Under the terms of the new scheme, a one-off annual delivery fee of $79 (£45) covers all orders placed for the year. Despite the initiative leading to a 17% increase in delivery costs, Amazon's Chief Financial Officer,

"Amazon claims it will continue to invest in new technology in 2006"

Tom Szkutak, described the scheme as "a positive investment for Amazon."

SHOP TALK

Despite missing the firm's targets, sales were up 21% in the US, and 13% internationally, while Amazon claims it will continue to invest in new technology, albeit at a slower rate than in 2005.

One piece of technology it might be backing out on, however, is its search engine. The loss of A9's Udi Manber to rival Google does not bode well. Danny Sullivan, editor of *Search Engine Watch*, told CNET: "Losing the head of [its] operations just diminishes [Amazon's] credibility…and puts a larger question mark behind what it's doing. Overall, the move is

not a good sign for [the company's] search prospects."

Credited by a number of consumer research firms as "the brain behind A9", Manber's departure suggests that Amazon's jiggerypokery in the searching market was more of an experiment for the firm, rather than a serious attempt to dominate the search competition.

A9, despite novel additions such as annotated searches, has not been a great success. In December, Nielsen/NetRatings placed the engine 27th in the US, only providing 0.1% of all searches. Amazon denies a lack of commitment to searching, and maintains that the service will continue to grow in strength and popularity. **PCF**

Forum

Transformers Archive

If there's one cartoon of vital importance for the whole of humanity, it is Transformers. Robots in disguise. The TF Archive's forums are the place for tricksy robot chats..

tfarchive.com/community/index.php

Road markings
PAVEMENT DRAWINGS

Pavement art is the preserve of guys who spend seven hours colouring in the left index finger of the Virgin Mary, on what you suspect is a huge print that the guy bought and taped to the pavement that morning.

Julian Beever raises the bar, though. He creates remarkable works of art that stretch for many feet along pavements, but when viewed from the correct angle, appear three dimensional.

As part of the Make Poverty History campaigns last year, a 13 metre globe was drawn in Edinburgh City Centre, appearing as a real globe sat on the slabs to those walking toward it. Our favourite is definitely the remarkable rendering of an apparently huge drop from the side of a building, from which the artist is rescued by none other than Batman.

users.skynet.be/J.Beever/pave.htm

Pr0n
GEEK FANTASIES

The term 'geek' has all but lost any negative connotations in recent years. Now entirely owned, or presumably p0wnd, by computer-bothering enthusiasts, generating the desired tears from the previously bullied has become that much harder.

There's no actual porn here, and alleging to be "created by geeks for geeks", it's a collection of bikini-clad models flaunting their stuff in short clips designed by people who claim, "We know what you want and we know how you like it."

Our favourite might be the nice lady holding cinema tickets for Star Wars. Or the one brandishing a boxed, mint condition Optimus Prime. No, it's got to be the announcement, on the roll of a well-worn D20, that "your magic missile has been resisted." Yes indeed.

www.geekfantasies.com

Copyright watch

John Walker
SONY AND SHARE

John Walker loses another limb of faith in the world

Change is afoot in the long-running battle between the BPI and those who share music in the UK. For the first time, legal threats have reached the courts, and two people have been convicted of… well, this peculiar and unnamed crime.

The BPI has decided not to name the men, who were hit with fines and hefty legal fees, but it is known that both had their cases thrown out by the judge, who found both guilty of sharing music. Or something.

An individual from Kings Lynn pointed out that the BPI had provided no evidence to the court that he had shared the files in question, but the judge didn't accept this, and ordered to pay a total of £13,500, plus unspecified damages. The second defendant, a postman from Brighton, stated that he had no idea sharing music was illegal, and pointed out that he'd not sought financial gain from his actions. The judge, Justice Lawrence Collins,

declared that "ignorance is not a defence", and then seemed to forget that other bit – the part where he should have pointed out that the accused hadn't done anything wrong.

This sets a worrying precedent. Until this point, those willing to give the matter more then five minutes' thought have stated: "If only one of these corrupt cases would actually reach a judge, then the nonsense would be revealed." It turns out we were wrong. The nonsense surrounding file sharing reigns supreme, and the judges seem to be on the side of the music industry.

The BPI's claim remains that file sharing is damaging record sales, and financially hurting musicians, while it simultaneously releases sales figures stating that record sales have never been higher. No one's telling the judges all this. And people simply sharing their music are being fined tens of thousands of pounds.

The law is an ass…et to money-hungry recording companies.

Picture Chris Garbutt

Save time! Save money! Subscribe!

3 WAYS TO SUBSCRIBE!

ONLINE www.myfavouritemagazines.co.uk/pfd/p014

PHONE UK 0870 837 4722 Overseas +44 (0)1858 438794 Please quote p014

POST Complete the form below

YES! I would like to subscribe to PCFormat and save!

PRICING

■ **CHEQUE/CREDIT CARD – SAVE UP TO 45%**

	1 YEAR (13 issues)	2 YEAR (26 issues)	3 YEAR (39 issues)
UK	☐ £44.99	☐ £80.98	☐ £114.72
Europe	☐ 46.99	☐ £84.98	☐ £119.32
USA/Canada	☐ £53.99	☐ £97.18	☐ £137.68
Rest of World	☐ 62.99	☐ £113.38	☐ £160.63

PERSONAL DETAILS

Title .... Forename ....

Surname ....

Address ....

....

Post/Zip code ....

Country ....

Telephone ....

If you'd like to receive emails and SMS from *PCFormat* and Future Publishing and its group companies containing news, specials offers and product and service information, please include your email and mobile no. below.

Email ....

Mobile no. ....

Please tick here if you are happy for us to pass your details to carefully selected companies so they can send you relevant information about their products or services by email ☐ or SMS ☐ .

PAYMENT DETAILS

☐ **I would like to pay by cheque**
(to be made payable to Future Publishing Ltd. Sterling cheques drawn on a UK account)

☐ **I would like to pay by Credit/Debit Card**

☐ Visa ☐ Mastercard ☐ American Express ☐ Switch/Maestro

ISSUE NUMBER ☐☐ (SWITCH/MAESTRO ONLY)

CARD NUMBER ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐

VALID FROM DATE ☐☐/☐☐   EXPIRY DATE ☐☐/☐☐

Signature .... Date ....

POST YOUR ORDER

OVERSEAS
PCFormat Subscriptions,
Unit 4, Tower House,
Sovereign Park,
Market Harborough,
Leicestershire,
LE16 9EF
UK

UK
PCFormat Subscriptions,
Freepost RLSC-SXSE-SKKT,
Unit 4, Tower House,
Sovereign Park,
Market Harborough,
Leicestershire,
LE16 9EF

OFFER CODE P014

OFFER ENDS 30 APRIL 2006

TERMS AND CONDITIONS: You will receive 13 issues per year. (Gifts are subject to availability. Please allow 28 days for delivery of gifts.) Your subscription will start with the next available issue. Please tick here if you do NOT wish to receive relevant information about products or services from Future Publishing or any of its group companies by post ☐ or telephone ☐ . Please tick here if you do NOT wish us to pass your details to carefully selected companies to enable them to contact you about their products or services by post ☐ or telephone ☐

PCFMail

DISCUSS HOT TOPICS AT forum.pcformat.co.uk

Hammond Organ recital night

I've just read the piece on 'Hide your PC in a table' (PCF184). Well, recently, my brother and I were asked to do something similar for our sister. The PC and PS2 needed a tidy home and we thought you may be interested in the result. The premise was – disguise a midi tower and PS2 in a piece of furniture. The carcass was an old Hammond Electric Organ, which we stripped out and then modified to take the new fixtures. The drawer, under the keyboard, with the drop down front is for the PS2 and the small cubicle on the lower right is for the PC. The flat screens are mounted on a platform which slides on linear bearings, lifted by a 12v motor, the action counterbalanced by some old gym weights, some control relays for position and direction of movement, all powered from a custom built PSU.

The new woodwork was given a couple of coats of stain, then varnish to match the original, a little gold stencil work to the music stand, the old speaker panel removed and the new one covered in black cloth.
CARL OLDFIELD
carl@lake1201.freeserve.co.uk

PCF says Being the hoary old Red Dwarf fans that we are, anything involving Hammond organs is a winner as far as we're concerned. Check out the fantastic video clip of Carl's wondrous creation on the coverdisc – the motorised pop-up monitors are a sight to behold and caused a brief office standstill. Top work, those brothers.

Software scandal

I am in my last year of studies at Keele University and I am doing a research paper which looks into the potential waste of money by consumers from purchasing pre-packaged computers from major high street retailers.

I am concentrating on the software aspect, looking at if the software (which came with the pre packaged computer) tends to become dormant in the user's system, and is therefore a potential 'waste' of the buyer's money.

Has this magazine ever covered such a topic before? I would appreciate any feedback and even your own or other team members opinions?
SANDEEP MATHARU
san84@ntlworld.com

PCF says It's like we've always said – building your own system makes far more sense than buying an off-the-shelf PC. It's cheaper, you have complete choice of components and, as Sandeep quite rightly points out, most of the software on a pre-built rig is utterly worthless. Even worse, many new systems are polluted with clunky proprietary apps that load on start-up, chewing up resources and depositing yet another ugly icon in the system tray. We wish Sandeep luck on the completion of his studies and hope he'll let us know what conclusion he comes to.

Care bugbear

Having read your review in PCF184 on Microsoft's new virus application I feel you have missed the point. Why are you praising Microsoft's anti-virus application without asking why it is not included in the first place? If Microsoft could create an operating system that is secure, like Linux, we wouldn't have to fear viruses. We pay a high price for Windows, we then have to live with its insecurities and pay for the anti-virus software to protect for its failings.

Are you all too wooed by a glossy exterior and a lot of hype to see through these fundamental operating system inadequacies?
BEN HALSTEAD

PCF says Firstly, 'twas an objective news piece, merely describing the beta version of OneCare, not a review. Secondly, we know full well our readers are smart enough to use a free alternative like AVG, which is why we put it on the coverdisc every month. But we also know they like hearing what new shenanigans MS is up to.

Force commander

I have now decided to boycott any game which uses StarForce. My first experience of StarForce came with *Trackmania*. Basically when installed it seemed to stop my DVD drive from working at all, it did strange things to my registry and eventually I discovered that StarForce had caused my drive to step down in speed in order to compensate for what it thought were errors on the disk. I found this site on the net **www.glop.org/starforce/** which gives more information about what the software can do and lists the games which use it. Sadly it can be hard to find out in advance if a new title uses it, and some people may be stuck having bought a game which they can not, or would not want to use.

At this time it is possible to download ANY game on the market illegally and apply a patch to it, regardless of what "protection" it uses. StarForce is only encouraging people to do this more often.
JAMES WINDER
james.winder1@ntlworld.com

PCF says Though StarForce staunchly maintains its software doesn't cause any damage to people's PCs, it certainly doesn't seem to be making any friends amongst games players – see our report on p52. For those troubled by StarForce, an official removal tool is available from www. onlinesecurity-on.com/protect.phtml?c=55.

Protect us from this awful paint job.

Mail of the month

Until recently my contact with your magazine has been limited to moving annoying piles of it around the house to get it out of my way. I didn´t need to know anything about computer stuff... it was strictly my boyfriend's domain.

However, this all changed when he decided a laptop would be a good Christmas present for me. He happened to have the latest edition (PCF182) of your mag lying around and suggested I take a look, as by complete coincidence, your Supertest was laptops under £800! I took it reluctantly and stuggled through the feature, but once we started looking at laptops I kept coming back to it, and must have read that thing 12 or 15 times in the end. I learned tons and have now got a pretty awesome laptop thanks to that feature (I even know more about them than my boyfriend now)! But it doesn´t end there. Once I got it home I wanted to get set up on the internet, so the next problem was what to do about anti-virus software and lo and behold, out came the same mag and there was a round-up of security software. Since then I have read that magazine cover to cover several times, spent most of my free time playing *King Kong* and *Narnia*, and am writing this on *OpenOffice 2.0*, also provided by you! Yours has become my absolute favourite mag and I can't wait for the next one!
'MOONCAZ'
mooncaz@aim.com

PCF says Glad to help, though clearly your lovin' fella's part in this epiphany can't be overlooked – we wish someone would buy us an £800 laptop for Christmas. Anyway, welcome aboard!

Mail in and win

We've teamed up with ace memory suppliers Crucial **www.crucial.com/uk** to give the author of our letter of the month a fantastic 512MB Gizmo! USB memory drive worth over £15. It works flawlessly with every version of Windows after Me.

You can air your views and write to the team at PCF Mail, PCFormat, 30 Monmouth Street, Bath, BA1 2BW, or via email at the address below. Or you can visit our forum at **forum.pcformat.co.uk**.

pcfmail@futurenet.co.uk

BLU-RAY
VS HD-DVD

Two formats are limbering up to dominate the home entertainment and PC markets. Dean Evans and Al Bickham are the earliest adopters

Blu-ray and HD-DVD will replace DVD, but don't expect the old format to disappear overnight – it's far too popular (and profitable) for the big studios to ignore.

Remember the DVD revolution? Dust off your VHS player, slot in a tape and you'll see why, in all its grainyvision glory, you signed up despite the astronomical initial outlay to change format.

So why should we be excited about Blu-ray and HD-DVD? The obvious reason is again enhanced picture quality in pre-recorded movies, allowed by the increase in disc capacity. The different hi-def video resolution standards are 720p, 1080i and 1080p. Those p's and i's stand for Progressive and Interlaced; essentially, progressive scan offers a sharper picture and a smoother transition between frames than interlacing, and is therefore preferable. A film running at the 1080p standard, the highest HD resolution, runs at 1,920x1,080 pixels. Put that into perspective with your PC's desktop resolution, or indeed the resolution of a standard DVD movie (usually 720x576), and you're starting to get an idea of just how

"A single-layer Blu-ray disc holds 25GB, HD-DVD discs can handle 15GB"

Now showing in HD

The Blu-ray and HD-DVD camps promise a generous movie line-up

Warner Bros, Paramount, Disney, 20th Century Fox, Sony Pictures, MGM and Lions Gate Films have all announced support for the Blu-ray format. See the full list of Blu-ray movies at www.blu-ray.com/movies.

The launch of HD-DVD will be backed by a 200-strong film library. The line-up will include hits such as Jarhead, Blazing Saddles and Harry Potter and The Goblet of Fire. Like Blu-ray, all films should be produced in the 1080p resolution, although this hasn't been confirmed.

With the US launch so close, it's surprising that nobody has seen how Blu-ray's or HD-DVD's interactive features work. Blu-ray uses Java, while HD-DVD uses an XML-based system called iHD, developed by Microsoft and Toshiba. The potential is there for games and links to other films, but just as the first DVDs had very few bonus extras, the first wave of high-def discs may not boast a great deal of extra content.

This shot from the menu of the HD version of Wil Ferrell's *Elf* demonstrates the sort of interactivity we're in for.

Blu-ray benchmarks
What our hands-on tests revealed…

BENCH MARKS	WRITE TIME (40MB HD clip)	READ TIME in secs	WRITE TIME to full capacity	AVERAGE WRITEVOLUME PER MINUTE
BLU-RAY (2X)	36s	8s	42m 35s	1.7GB/min
DVD (8X)	1m 10s	26s	10m 09s	0.47GB/min

More benchmarks and details can be found on your DVD

INITIAL THOUGHTS:
Blu-ray discs are considerably quicker to write to and read from than standard DVDs, and a single-layer disc can hold 10GB more than its HD-DVD counterpart. It's an excellent, not to mention timely upgrade to existing DVD technology, and until we can perform the same tests alongside HD-DVD, we have to say we're leaning towards Blu-ray as the format of choice. However, until the cost of drives and media is downgraded from astronomical to sensible, we'd say hold your horses. A year down the line, and you'll get a whole lot more for your money.

much more detail you can fit into the image. Of course, you'll also need an HD-Ready TV, as standard CRT and digital TVs simply aren't capable of outputting an image at these high resolutions.

That extra resolution means far more data on a disc, and that's why HD -DVD and Blu-ray have been developed. A single-layer Blu-ray disc can hold 25GB of movie data, while HD-DVD discs hold up to 15GB on a single-layer disc. This time next year, we're expecting to see quad-layer Blu-ray discs, holding up to 100GB of data. Needless to say, this means the potential for a lot of extra content beyond the movie itself. Manufacturers and movie studios are talking about huge, detailed featurettes behind every scene of a film, accessible mid-movie through the menu system, and online ⬊

Expect high-profile movies to be released on Blu-ray and HD-DVD from day one.

interactivity which will enable you to select a scene, click on an item, and go online to find out more about that part of the film, allowing for updated, and timely, information.

"Notebook HD-DVD or Blu-ray drives are a very enticing prospect"

BEHIND THE SCENES

This is all well and good for self-contained hi-def players (the kind that'll live under your TV), but for PC BD and HD-DVD drives, there will be a certain baseline set of requirements for movie playback, and it's not just about system specs. Every part of your PC will need to be HDCP-compliant (see 'Why DVD won't die'). That means a whole new rack of components in your PC, not just a new TV, so the expenditure for watching movies on your PC is likely

to be high. We're expecting to see multimedia notebook manufacturers benefit from this most of all, as HDCP-compliant components can be built in at the factory level; a notebook with a BR or HD-DVD drive is going to be a pretty attractive prospect for many of us who might otherwise need to replace every component in our PCs.

It's hardly bad news though. A hi-def optical drive – and *PCFormat* has been lucky enough to try the first samples – is still useful, even if your other components won't let you watch movies. Imagine using a single quad-layer disc to back up all your movies, and another for all your music. The first discs will be re-writeable too, which means you can keep a constant backup of your entire file system in case your PC

What's in the box?
The view from inside a Blu-ray drive

EYE SEE The Samsung Blu-ray drive packs both red and blue lasers, making it backward-compatible for CD and DVDs.

FLEXI-TIME The moving parts, combined with the heat generation of blue laser mean that the drive must be fan-cooled.
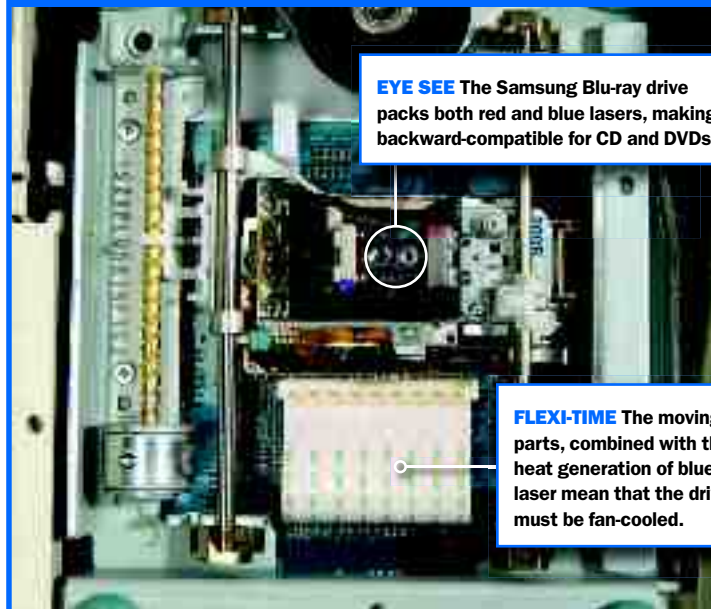
BLU-RAY

With higher capacity than its opponent, will Blu-ray become the format of choice for high def video?

WHO'S BEHIND IT?	Blu-ray Disc Assoaciation (BDA)
WHO'S BACKING IT?	Sony, LG, Mitsubishi, Panasonic, Philips, Pioneer, Samsung, Sharp, JVC, Apple, HP
WHO'S USING IT?	Warner Bros, Paramount, Walt Disney, 20th Century Fox, Sony Pictures, MGM
CAPACITY (ONE LAYER)	25GB (2.9 hours of HD MPEG-2, 5.5 hours HD MPEG-4)* 27GB (rewritable)
CAPACITY (TWO LAYERS)	50GB (5.8 hours HD MPEG-2, 11.1 hours HD MPEG-4)*
CAPACITY (THREE LAYERS)	N/A
CAPACITY (FOUR LAYERS)	100GB (11.7 hours HD MPEG-2, 22.2 hours HD MPEG-4)*
THEORETICAL MAXIMUM CAPACITY	200GB
THEORETICAL MAXIMUM LAYERS	8
VIDEO CODECS	MPEG-2, MPEG-4 AVC, SMPTE VC-1
AUDIO CODECS	Linear PCM (LPCM), Dolby Digital, Dolby Digital Plus, Dolby TrueHD, DTS Digital Surround, DTS-HD, MPEG-2 TS
COPY PROTECTION SYSTEMS	AACS, HDCP, BD+, ROM Mark
REGION CODING	Possible three region system
WRITE SPEEDS AT LAUNCH	1x (36Mbps)
DISC TYPES	BD-ROM (read only), BD-R (recordable), BD-RE (rewritable)
DVD COMPATIBLE	Yes**
INTERACTIVE FEATURES	BD-J (Java)
PROJECTED PRICING (MOVIES,RECORD, RW)	MOVIES £20-£23, RECORDABLE £10 (25GB), £25 (50GB), REWRITABLE £14 (25GB), £34 (50GB), PC DRIVE £300-£400
RELEASE DATE UK/EUROPE	April/May
PRO	Brand new disc structure increases capacity and Blu-ray can scale to 200GB
CON	Blu-ray is expensive and features more DRM technology than HD DVD

* Based on 8.5GB/hour for HD MPEG-2 and 4.5GB/hour for HD MPEG-4 ** Depends on drive type

High definition, high security

To keep Hollywood happy, copy protection has been beefed up to the max for HD-DVD and Blu-ray

Both the HD-DVD and Blu-ray standards make use of a shared DRM system that's specifically designed to protect high-def content. Dubbed AACS (Advanced Access Content System), it replaces the crackable Content Scrambling System (CSS) currently used in today's DVDs.

Where CSS relied on a 40-bit group decryption key that was allocated to every model of DVD player, AACS uses decryption keys that are tied to individual devices. That means that every HD-DVD or Blu-ray player, whether it's a living room system or a PC drive, will have its own 128-bit Advanced Encryption Standard (AES) key. This key is used to decrypt an HD disc's unique 128-bit key (the Media ID), which is then used to decrypt the 128-bit Title Keys and gain playback rights to the content.

SAFETY IN NUMBERS
Crucially, AACS is more than just a buffed up version of CSS. AACS has the ability to renew device encryption keys, so hacked players can either be 'fixed' or have their keys revoked completely, disabling all playback functions. AACS also supports what is known as Online Enabled Content, where content on a disc is only playable after being authorised with the content provider over the internet.

AACS also supports two extra features – Streamed Content and Mandatory Managed Copy.

Streamed Content enables providers to deliver on-demand content over a broadband connection, ie. an extra 'making of' documentary or a supplementary language track. Managed Copy, meanwhile, gives the disc owner the ability to copy the content onto alternative media, such as a home media server or a portable device.

While HD-DVD and Blu-ray share the same AACS protection, the Blu-ray format slaps extra levels of defence on top of it. BD+ enables content providers to dynamically update the content protection of a Blu-ray player over the internet (or in a viral manner by embedding new code on newly-produced discs) if the player has been hacked. It's very much like the updates cycled out to Sky+ recorders and means that should third-party tools to rip BD-ROMs appear, new code can be published to fix the problem.

In addition, each Blu-ray disc will have its own 'ROM Mark', a unique watermark technology that can only be added by licensed BD-ROM manufacturers, hopefully preventing any unauthorised disc copying and disabling playback on unlicensed devices.

There has also been talk of Hollywood studios being able to add their own DRM technologies to Blu-ray discs. 20th Century Fox, for example, is rumoured to be unhappy with the Managed Copy feature and could include proprietary code (running after the AACS, BD+ and ROM Mark checks) to disable it. Clearly these technologies give the entertainment content producers an unprecendented amount of control over what you can do with a legitimately purchased disc – and also some accesss to your PC at the hardware level. Which is the basis for many people's objections to DRM.
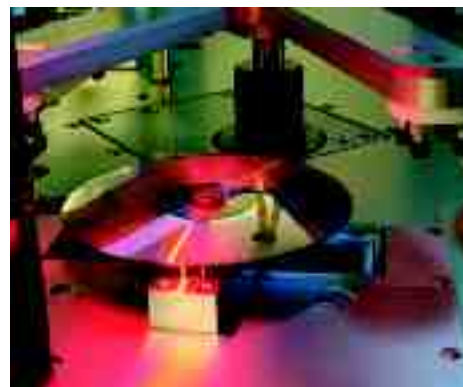
Both Blu-ray and HD-DVD use the same AACS protection, which features 128-bit encryption keys on the disc and in the disc player.

HD-DVD

WHO'S BEHIND IT?	The DVD Forum
WHO'S BACKING IT?	Toshiba, Microsoft, NEC, Sanyo, Fujitsu, HP, Intel
WHO'S USING IT?	Universal, Paramount, Warner Bros, New Line Cinema
CAPACITY (ONE LAYER)	15GB (1.5 hours HD MPEG-2, 3.25 hours HD MPEG-4)* 20GB (rewritable)
CAPACITY (TWO LAYERS)	30GB (3.5 hours HD MPEG-2, 6.6 hours HD MPEG-4)*
CAPACITY (THREE LAYERS)	45GB (5.2 hours HD MPEG-2, 10 hours HD MPEG-4)*
CAPACITY (FOUR LAYERS)	N/A
THEORETICAL MAXIMUM CAPACITY	60GB
THEORETICAL MAXIMUM LAYERS	4
VIDEO CODECS	MPEG-2, MPEG-4 AVC, SMPTE VC-1
AUDIO CODECS	Linear PCM (LPCM), MLP (True HD), Dolby Digital Plus, DTS Digital Surround, DTS-HD, MPEG Audio
COPY PROTECTION SYSTEMS	AACS, HDCP
REGION CODING	No
WRITE SPEEDS AT LAUNCH	1x (36.55Mbps)
DISC TYPES	HD DVD-ROM (read-only), HD DVD-R (recordable), HD DVD-RW (rewritable)
DVD COMPATIBLE	Yes**
INTERACTIVE FEATURES	TBC
PROJECTED PRICING (MOVIES,RECORD,RW)	PC DRIVE £300-£400
RELEASE DATE UK/EUROPE	March/April
PRO	A similar disc structure to DVD means low production costs for manufacturers
CON	Losing support as big industry names throw weight behind Blu-ray

HD-DVD is closer in execution to traditional DVD, and as a result, may well prove cheaper than Sony's format

The hi-def generation

goes belly-up. And all this on three discs. You'll be surprised at the write and read speeds too – see the Blu-ray Benchmarks boxout for details. What's more, the Samsung Blu-ray drive we examined also had CD and DVD capabilities too, so you won't need two drives clogging up your 5.25" bays.

HANDLE WITH CARE
However, care will need to be taken with those discs, especially the Blu-ray flavour. Any given write-layer on a Blu-ray disc is a fifth of the depth of a standard DVD disc write-layer. In practical terms, this means Blu-ray discs are far more susceptible to scratch-related problems than other disc types; a single scratch could potentially wipe data out, rather

"It's early days for these formats, so early adopters face very hefty price tags"

than simply refracting the laser and causing minor read errors (or pixelation, in the case of movies). However, new hard-seal coating technology has been developed to help combat this, along with advanced error-correction algorithms which, given the data either side of the scratch, can intelligently fill in the gaps on the fly. The result should be discs that, if handled with care, should be hard to scratch, and should survive even if they are.

It's early days for these formats, so early adopters will face some hefty price-tags. The pay-off will be high-quality movies and high storage capacity, but those early costs will mean slow uptake – and a further outlay in the TV or PC department. Christmas will see some price drops; until then, HD-DVD and Blu-ray will remain a luxury. **PCF**

The large storage capacity of Blu-ray and HD-DVD will mean that video games, quizzes and links to other films will appear as bonus material.

Best of both worlds
Multi-format drives are in the works, too

Many Blu-ray drives will be able to play standard DVDs and CDs as well as Blu-ray discs. The difference between blue laser and red laser technology is quite pronounced however, so if you pry open one of these drives, you'll find that the read-head has two lenses – one for red laser and one for blue.

Going a step further Hewlett Packard has announced a hybrid drive capable of playing both Blu-ray and HD-DVD discs. However, this should be simple case of refocussing the blue laser lens, so a single read head should suffice. Hybrid drives are a slightly sensitive issue however; many other manufacturers have backed down from the idea because of pressure from either Toshiba (HD-DVD), Sony (Blu-ray), or other market competitors. Nice to see at least one company on the side of the consumer though...
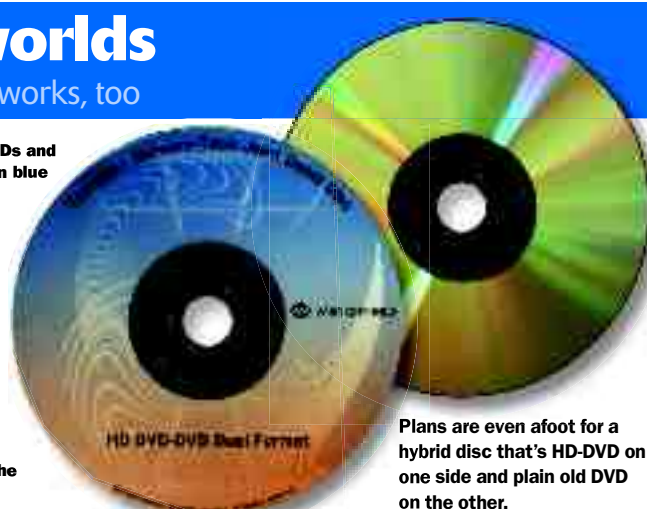
Plans are even afoot for a hybrid disc that's HD-DVD on one side and plain old DVD on the other.

Why DVD won't die
HD-DVD and Blu-ray won't kill off DVDs – yet

It's easy to get carried away by the imminent arrival of HD-DVD and Blu-ray. But it's worth remembering that these new formats won't spark a wham-bam, midnight-queues-at-Dixons revolution. Instead, HD-DVD and Blu-ray face a slow and sluggish start. Here's why...

1) HD-DVD VS BLU-RAY
Who's going to win? Industry favour is fickle, seeming to swing towards Blu-ray one month, HD-DVD the next. Most movie producers are hedging their bets by backing both formats and while we might not see a combined 'HD-ray' format, it's possible that HD-DVD and Blu-ray will exist alongside each other just as DVD-R, DVD+R and DVD-RAM do.

2) SKY-HIGH PRICES
Toshiba has announced that its first batch of HD-DVD players will cost $499-$799 (£284-£455), while Sony and Samsung are prepping Blu-ray hardware that will cost $1,000-$1,800 (£570-£1,025). Estimates suggest that a standalone Blu-ray drive for the PC will cost around $500 (£286), with blank single layer discs setting you back an additional $25 (£15) per disc. Such high prices will slow the adoption of both formats in 2006 and 2007.

3) HD DISPLAYS AND HDCP
Unlike the transition from CD to DVD (or VHS to DVD), the HD age requires a heftier investment beyond shelling out for an HD-DVD or Blu-ray drive. If you're going to buy a high-def player, you'll need a high-definition display to go with it.

We know what this entails as far as the living room is concerned – you'll need an 'HD-ready' set with

an HDMI or HDCP-compliant DVI connection. Hollywood is jumpy about transmitting HD video over unprotected analogue connections (such as component), so both Blu-ray and HD-DVD players will forcibly downgrade HD content to standard definition if an analogue connection is used.

HDCP (High-bandwidth Digital Content Protection) is mandatory for HD-DVD and Blu-ray playback and this requirement effectively restricts any PC you buy today from playing back a commercial HD movie. At the time of writing, there's only one graphics card which supports the HDCP system, although there's likely to be a sudden rush of cards within the next couple of months. At present, though, there's just the latest Sapphire X1600 Pro, which boasts the essential HDMI output for full compatibility with hi-def discs.

Not only will you need an HDCP-compliant graphics card, but Hollywood's desire for absolute encryption on a PC means that HDCP will need to be present throughout the architecture – ie. in the drive, in the OS, on the motherboard, in the graphics card and in the monitor. Simply put: without HDCP, you won't be able to watch movies on your PC. In fact, there's little chance of doing so before the release of Vista.

You'll need to buy an HD display (with an HDMI or HDCP-compliant DVI connection) to go with your HD player.
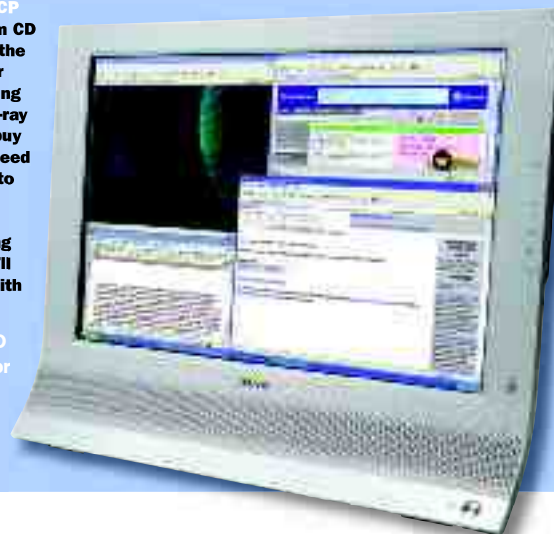
Will my programs work with Vista?

Will deciding to update Windows this autumn mean updating your software library, too? Mike Abolins finds out…

Come on now, you know you're going to. Whatever your feelings about Microsoft and Windows in general, however hard you espouse the tenets of a Linux world, you're going to want to try Windows Vista. The latest and, quite possibly, greatest version of the world's most popular OS will be shipping to system builders this August (according to sources at the time of writing) with a retail launch following quickly on its heels in October and we know you're tempted. Or, at the very least, intrigued.

After all, we've heard all about the new features, the shiny new UI (which is unnervingly Mac-inspired, is Steve Jobs on commission?), *Internet Explorer 7* and *Windows Media Player 11*. But what we've not heard about is support for the programs that we already own. Newly-released applications are, by and large, beginning to appear with support for Vista built in, but everybody's being very coy about existing apps. Will your old version of *Microsoft Office* work on a Vista machine, for instance? How about *WinAmp*? Or *Nero*? Or *Photoshop*?

It's quite a quandary, we're sure you'll agree. So we got our hands on the latest pre-release build from Microsoft (December's CTP build 5270) and installed in on an averagely capable PC (2.0GHz Pentium 4, 1GB RAM, GeForce 4 Ti4600). We then proceeded to dig out all our favourite programs and put them through their paces on Vista. Some took to the new OS like ducks to water; others were more, shall we say, hydrophobic, and failed to start.

We've recorded details of our exploits here, providing you with a glimpse of what you can expect come V-Day. Of course, it's a rough guide; there's still a lot of work on backwards compatibility to be done by Microsoft in the meantime. But it's a glimpse, nonetheless, so join us as we enjoy the view.

→ The Browser Essentials

The free downloads, utilities and programs you take for granted

Yes, programs like *Adobe Reader*, *Macromedia Flash* and *QuickTime* are going to be updated countless times before Vista comes close to going gold, but if you're considering trying the beta version out it's useful to know what's going to work and what isn't. Starting with what isn't, and without reading too much into it, we encounter *QuickTime*. You can download and install it without incident but at this stage *Internet Explorer 7* isn't altogether happy with the plug-in. *Adobe Reader* will run, but you'll need to download the version for Windows NT (SP/version 6), which the Adobe website will recommend anyway.

Of course, *IE7*'s going to have to go some way to replace *Firefox* in our hearts, so you'll be gladdened to hear that the Mozilla browser is just as at home on Vista as it is anywhere else, as are many of the browser extensions that are available, including Mouse Gestures.

← Security
Vista has beefed up Windows' defences but it still needs a hired gun

We'll say it here and say it loud: you will likely need an all-new security suite for your Windows Vista machine. Neither McAfee nor Norton's 2006 ranges of programs work on Vista due to the different way that the registry is structured. *Panda Platinum 2006 Internet Security* suffered a similar fate; while you can start the installation process of each of these programs, it'll grind to a halt around two-thirds of the way through when the program discovers that not everything is where it expects it to be.

Where the big names fail, though, is a chance for the underdogs to shine. Step forward *BitDefender 9*, the only internet security software that would happily install and run. We encountered no problems with it whatsoever and it synchronised itself completely with the Windows Security Centre. *Windows Defender* – the new version of Microsoft's *AntiSpyware* program – did throw up a few temporary barriers until we'd given *BitDefender* approval to run at startup and in the background, but that's a minor issue.

⇒ Entertainment
Give me moonlight and music, codecs and advance release versions of *WinAmp*

With *Windows Media Player 11* in the fold, you're pretty well taken care of already, but there are enough of you out there (and here at *PCF*) who aren't happy relying solely on Microsoft's app. *WinAmp* will still run on your Vista desktop, albeit without the shiny new Glass effects, but this is a problem common to many older applications that haven't been developed with Vista in mind. It'll throw up a few issues when it comes to ripping CDs into MP3, but this'll be repaired in time for the OS's official launch later this year. If you've got a Creative sound card, such as an Audigy or X-Fi, the company's releasing beta versions of its *MediaSource* player for Vista that can be downloaded at **www. eurioe.creative.com** alongside drivers and firmware.

There's still no DVD codec included in Vista, so a third-party program like Cyberlink's *PowerDVD* is necessary. You'll need the latest version, *PowerDVD 6*, as older editions use an installer that's not supported in Windows Vista.

← Office
Microsoft's own Office suite can't fail to work, but what of the others?

You always knew that with any new version of Windows, your old copy of *Microsoft Office* was almost guaranteed to function correctly. And it's the same here. We ran *Microsoft Office 2000* and *Office XP* on our Vista machine and had no trouble whatsoever. They even took to the shiny new Glass skin, with transparency effects working full-time in the title bar of each window. *Office 2003*, likewise, ran flawlessly.

OpenOffice 2.0 also ran smoothly, though, even the Java (J2SE) components. If you know *Windows XP*'s track record with the Java Runtime Environment, you'll understand the slight amazement. Anyway, each of the *OpenOffice* components works on Vista as it would any other OS, proving that there's a lot to be said for open source software development. Even the thumbnail previews of the Open Document files that *OpenOffice* uses by default were visible in My Documents.

Windows compatibility

← Creativity

You'll want something more capable than *Paint* in your corner come the fall

Anyone who bought the October 2002 edition of *PCFormat* would have been fortunate enough to receive a full version of *Paint Shop Pro 5* on the coverdisc. This was, of course, in the days before Corel bought the program and gave it the much-needed makeover that it needed in order to compete with *Photoshop Elements*. But still, it's a tremendous program and a powerful image editor in its own right. And it will run on Windows Vista right now. An annoying registry error message does pop up during installation and when you start the program, but you can happily ignore it. Which is more than could be said for Adobe's consumer image editor, *Elements* which failed to install without some cajoling and bypassing of the auto-installer to dig out the executable. When we did manage to install it, a key DLL file wasn't where *Elements* expected it to be, rendering versions 3 and 4 of the program unusable, as well as the trial version of its big brother, *Photoshop*.

→ Multimedia

HD-DVD support's a given, but what about Blu-ray and regular CD-Rs?

The whole Blu-Ray versus HD-DVD debate, somewhat reminiscent of the old Betamax/VHS days, seems to be edging closer to an agreeable conclusion. Despite only offering native support for HD-DVD playback in the final consumer version of Windows Vista, Microsoft recently announced that the OS would recognise Blu-ray movie discs, but that they won't play unless you have a third-party app that supports the format, much like DVD movie discs in XP.

While packet writing to recordable CDs and DVDs is supported natively in Windows Vista and you can burn audio CDs using *Windows Media Player 11*, you'll still need a third party program for handling ISO images and other burning duties. Nero doesn't work, so that goes out the window, but we did have success with Sonic's *RecordNow!* suite, though it was prone to sulkily crashing after it had finished burning a CD.

Upgraders to Vista who have children will be pleased to see that encyclopaedia staple *Encarta* works as far back as the *2002* edition, the earliest copy we could lay our hands on.
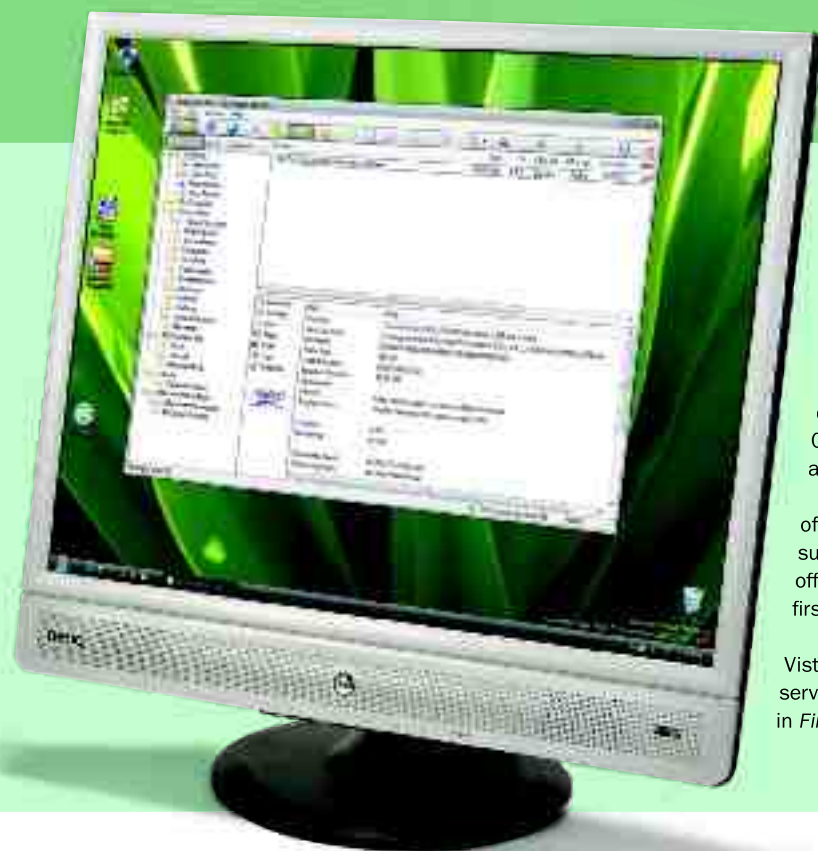
← Downloaders

P2P fans and BitTorrent users have little to worry about in regard to compatibility

Anyone who's downloaded *OpenOffice* using a BitTorrent client knows just how powerful an application it is. We were delighted to see that one of our favourites, *BitComet* (verson 0.6) ran without a hitch, both downloading and uploading files and enjoying a seamless integration with *Internet Explorer 7*.

P2P clients are equally well catered for; the latest versions of *LimeWire*, *eDonkey2000* and *Shareaza* all offered complete support for the new operating system. The Windows Firewall offers the usual dialogue box upon using each program for the first time but can still be bypassed by selectively unblocking.

The free FTP client *SmartFTP* also runs smoothly on Windows Vista, allowing you to manage file transfers to and from FTP servers in an efficient manner. Likewise, the download manager in *Firefox* works just as well running on Vista as it does in XP.

← Utilities
The bread and butter applications of your everyday computer life

They're not big but they are pretty clever. They're the applications you take for granted. Until, that is, they disappear, stop working or haven't been installed in the first place. Programs like *WinZip*, for instance. Vista has native support for the zip file format, but like XP before it, it's limited. So it's a good job that *WinZip* runs properly, even down to the context menus you get when right-clicking on a file. *WinRAR* was less helpful on that front, crashing whatever window you might have open and necessitating a restart of *Explorer* when doing anything at all with a compressed file, whether it's right-clicking, copying, pasting or attempting to open.

As for diagnostic utilities, we got *Motherboard Manager* working to provide temperature read-outs for our system, but other applications like popular registry tweakers and disk tools all met an untimely end, not fitting comfortably enough into the new operating system.

→ Other Apps
Skype, AutoRoute, FRAPS and more, tested in the fancy surroundings of Vista

Skype is Vista-ready, with version two running nearly flawlessly on our test PC. There were no problems getting connected to other users and, although our contacts list was up and down like a yo-yo, it was no different to using it on any other OS. *MSN Messenger*, unsurprisingly, also fared well, especially the beta of the upcoming version 8 – renamed *Windows Live Messenger* – which has full support for the transparency effects implemented with Glass.

AutoRoute's a 50/50 story. While it installs without any problem and runs well, the toolbars have the annoying habit of disappearing. You can still use the route-finder, though, and we tried out the most recent iteration (2006) as well as one from four years ago (2002), mapping out a route successfully, if a little by trial-and-error given the interface issues.

FRAPS, the stalwart benchmarking and game recording utility, is much more at home. The app will reliably record videos and take screenshots, as well as showing the framerate of any games.

← Games
Because all work and no play makes Vista a dull operating system

Games were a major casualty when we upgraded to XP and it's going to be similar for Vista, too. We tried installing several older games, including office favourite *Total Annihilation* and a few DOS abandonware titles, all to no avail. Emulators will be developed, but when it's this hard to get old games to run on the 32-bit edition, we hold out little hope for the 64-bit editions.

Happily the original *Half-Life* worked, and fully integrated itself into the new Games folder, where the shortcuts for your games are now stored. Vista retrieved a link to the Valve website, and also added the Mature ESRB rating for animated blood. The ratings form part of Vista's new parental controls, which stop limited account users from playing unsuitable games.

More up-to-date fodder, such as *UT2004*, *Half-Life 2* and *Dawn of War* all ran successfully, if a little bit slower than on an XP system due to more system resources being dedicated to the OS.

Conclusion
Thinking back to the release of Windows XP, you could say with some certainty that if a program ran on Windows 2000, you'd be able to run it on XP. That's a situation that's not been replicated here; while XP and Vista share several family similarities (almost all earlier builds were little more than skinned editions of XP), there are significant changes beneath the bonnet that prevent many apps, both loved and hated, from running.

But, to be honest, we were surprised to see so many programs run without a hitch on Windows Vista already. While build 5270 (released as a Consumer Technology Preview in December) still has a lot of work to be done on it, it's a very promising start. PCFormat's biggest concern right now is gaming performance rather than application compatibility. Microsoft must sort this out before the final release.

THE λ FILES

A GLIMPSE INTO THE GREAT UNKNOWN

In City 17, Humanity rises up to take on the Combine in the aftermath of Half-Life 2. Richard Cobbett unearths the news from a few blocks behind the front line

Greetings, comrade. I say comrade out of hope, for the alternative doesn't bear thinking about. Should these files fall into the merciless hands of 'our benefactors', the Resistance is as good as over, and with it, all hope of a free, human Earth in our lifetime

Nevertheless, the truth must out, and so must you. With the disappearance of doctors Eli Vance and Judith Mossman following the assault on Black Mesa East, it is imperative that those leading our fight have the full story on what we face…the horrors to come, even if the impossible is true and the

Citadel has fallen… If you are reading these words, that task has fallen to you – whether by choice or otherwise, it matters little. Get to the front lines in City 17 by any means necessary, and deliver these words to Barney Calhoun before it's too late.

TO RECAP

Call it 15 years ago. A team of scientists working out of the top-secret Black Mesa facility in New Mexico undertook an experiment that would change the world for the worse.

AFTER BLACK MESA

Everything's become… disconnected. They say it's something in the water supply; a drug, slipped in by our Combine 'benefactors' to make us forget the past. It's working. It's working all too well. Years melt into years, bookended only by death and destruction, and the rapid environmental changes turning our once-proud world into something… other. The Combine have poisoned the land; drained our oceans. Survival outside the cities grows more and more impractical by the minute, alien creatures seeded across the world during the Portal Storms of 10… er is it 15 years ago? The Antlions, the Headcrabs, the Synths… it's hard to imagine life without them.

Model photos Andy Short

All-out war is coming to the devastated streets of every city on Earth. Are you ready to fight?

Our intelligence on the Combine itself is sadly limited; only by its works can we know it. From Xen, and its works here, we believe that standard MO is to select one member of the dominant species of a world and… elevate them. On Xen, Nihilanth. On Earth, Dr Wallace Breen, former Administrator of the Black Mesa facility. Much of his past remains shrouded in mystery; most notably, his role in the Resonance Cascade and how the facility acquired the alien sample required to open the Portals in the first place. Not open to debate, however, is the fact that, since orchestrating the surrender of Earth following the Seven Hour War and his subsequent assignment to the City 17 Citadel's penthouse suite, he chewed down on the mouldy sausage of Combine propaganda. You couldn't so much as get beaten around the face by without hearing him say 'It's safer here'.

Hah! Not any more Doctor. Ever since Freeman brought down the Citidel and you with it your 'safe' little world has fallen apart. The gates are open and the streets are now awash with the monsters you ➘

"Our intelligence on the Combine is limited. Only by its works can we know it"

c15 YEARS AGO…

A mysterious alien sample, later discovered to have been stolen from the monstrous alien entity Nihilanth on the border world of Xen, kicked off what the scientists called a Resonance Cascade. All over the world, dimensional rifts kicked open, Black Mesa was the first to fall to the alien hordes, but the unimaginable monstrosities soon appeared all around the world. With Nihilanth's death at the hands of Dr. Gordon Freeman, the portal was closed, and Xen pacified. Hurrah for the good guys. At least for a while. Unfortunately, Xen was only the first step. It soon became clear that the aliens Freeman faced were little more than refugees, enslaved by the Universal Union… the Combine, if you will. With the path cleared, Earth faced all-out warfare, holding out for under seven hours.

Dr. Wallace Breen. Have we really seen the last of him? Don't count on it...

EARTH SURRENDERS

The Seven Hour War. We will all have to relive

helped bring here. Just getting around the city takes a full squad for protection and not even the Combine minions are exempt. We've all had to get used to the new Zombine hordes... but for all that, we've yet to see the Combine tip their hand. Civil Protection, bribed with better food rations and brainwashed into abusing their fellow man, are still around. As are the Overwatch units, beneath their helmets, a transhuman mix of human and alien. The actual entities behind the Combine have not, to the best of our knowledge, deigned to pay us a visit as yet. Reports smuggled out of the Citadel by our agents in Civil Protection show Breen in communication with an 'Advisor', resembling nothing more than a huge slug.

Crucially, despite the Combine's violent annexing of our world, they and Breen had been at pains to convince us they were a 'positive' force, bringing order. The lie worked better when people weren't starving in apartments full of dying refugees, unable to remember, denied their basic human instinct to breed. But now the Suppression Field is down and we can all fight back. Perhaps we have a chance, if we can find a way to survive long enough to foster a new generation.

But the Combine lie still presents a clear threat to the Movement. As of now, we only know of one true Combine superweapon – the Tripod Strider, with its mounted death ray and pulse turret, occasionally seen patrolling the streets as a show of strength. We know that the Combine has at least three other weapon types at its disposal; images leaked from the City 17 Citadel showed two hitherto unencounted Synths.

The final Combine resource left

TODAY

In fact, the Combine is increasingly proving to be less of an alien race as a philosophy – harvesting the best parts from each world and adding it to an interdimensional melting pot. The most obvious example are the Synths – hellish bio-technological hybrids. Combine dropships, far from simply resembling flying crabs, appear to have a huge chitinous monster grafted onto the more familiar hover technology; gunships resemble dragonflies with built in pulse-turrets. It is unclear whether or not these are based on Earth species, or on related creatures such as the totally mindless Xenian 'Headcrab'.

"There's not a man or woman in the Resistance that wouldn't follow Freeman into hell"

THE FUTURE?

The first, dubbed the 'Mortar Synth' by our mole in Civil Protection, resembles a brightly coloured fish, with an integrated weapon apparently capable of long-range projectile combat. The second, codenamed 'Crab Synth' is more immediately recognisable.

Sadly, this is all the conclusive evidence we were able to obtain – shortly after transmitting the attached photographs, our mole was given permanent off-world assignment for failure to 'innoculate' Dr. Gordon Freeman during his assault on Nova Prospekt. From the pictures provided however, we believe that these Synths will not be in a position to take an active role prior to our assault on the Citadel, but will undoubtedly take part in the next stage of the battle. The Aftermath, if you will.

Get ready to meet these abominations.

untapped is the 'Stalker'. These are hardly the Combine's most secret atrocity – indeed, up until the recent explosion, the prospect of conversion into one of these shambling horrors provided as good a reason as any to avoid the train to Nova Prospekt. However, with the collapse of the Citidel their role as service drones, assigned to the upkeep of Combine technology, is over. They have been kept in reserve in the hope that Resistance fighters will be unable to pull the trigger… a doomed fantasy. Their forcefully removed brainstems, limbs, body fat and digestive systems, not to mention the constant cries and moans of pain make their deaths nothing less than a mercy killing.

The Resistance

Alyx Vance has confessed to me her own particular blend of pity and revulsion for these unfortunate creatures. Which reminds me: next time you see her, please tell her to stop wearing her official Black Mesa t-shirt on infiltration missions. It lacks… a certain subtlety. Not as much as the giant robot capable of bending Overwatch spines into bone sculptures, but every little bit helps the Movement's struggle. If she and Eli could try to get kidnapped on a less regular basis, that would also be super.

So we come to Dr Gordon Freeman. Where to begin? Of course, you have your own history with him from your days in Black Mesa Security. Your word puts him beyond reproach; to say nothing for Drs Vance and Kleiner, and our Vortigaunt allies. There's not a man or woman in the whole Resistance who wouldn't follow him into hell, which given the circumstances is probably a good thing.

However, that's not to say that everyone is as taken in by the

"Where is he? How does a man achieve so much, only to vanish on the eve the big push?"

stories. Here we have a man who reappears, pretty much out of thin air, with not a word of explanation, and promptly does in one single day – with nothing more than a HEV suit and a crowbar – what our forces have been unable to do in 15 years

> ## "The Combine lie presents a very serious threat to the success of the Movement"

of resisting the Combine. If you believe the stories, he's taken down every guard post from here to Black Mesa East, he's single-handedly saved half the Resistance on Highway 17, he's led an army of Antlions – simply walked up to them and they've obeyed his command – against Nova Prospekt… Come on! Next they'll be saying they saw him wandering around Ravenholm!

THE FREEMAN

And questions are being asked. Where is he? How does a man achieve so much, only to disappear right on the edge of the big push? It's reached the point where Freeman's death would be almost as crushing a blow as the Combine's new toys. Should he put in one of his magic reappearances, we must ensure his safety. One man alone cannot win a war, but the morale loss from his HEV suit-clad carcass fixing Combine food dispensers would be… incalculable. It shouldn't be difficult to find teams willing to accompany such a legendary figure into combat; to say nothing of young Alyx's interest in shadowing his moves. At the very least, her companion Dog can provide more impressive muscle than a crowbar and pistol.

Speaking of Eli's disappearance, this letter recently came into our possession. It was originally directed towards the Black Mesa East resistance facility, but was salvaged, unopened, following the most recent assault by our Combine oppressors. As the highest-ranking officer on the ground at the time,

Curious to find out how we blended game art and photography? Find out next month…

Alyx and Freeman are going to be inseperable. Now it's a team effort.
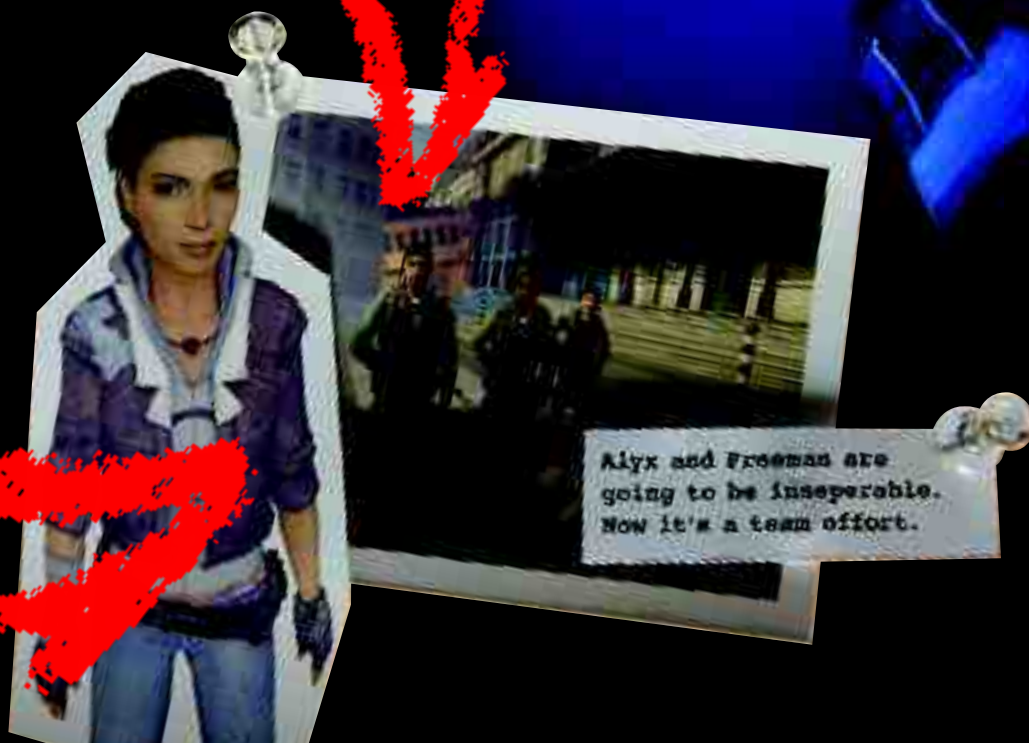
how we proceed on this matter is now down to you. Now the Citidel is down, our immediate priority is to support Dr Freeman and Alyx Vance. From now on, they're going to be inseperable but they'll need our help to retake the city. The heart of the Citadel kept the Combine's dimension open, and if the Black Mesa incident taught us anything, it's that they can't easily tunnel through

teleportation currently eludes them. If we can cut them off from their home dimension, at least we'll be able to make a start on mopping up the armies of Civil Protection and Overwatch left behind.

AFTER THE STORM

But something as big as the Citadel isn't going down easily. Our troops are fighting hard and hell, even Freeman himself is out there

"Count on one thing – this second clash will be to the death; we're on the brink"

without help on our side. This may buy us some time. Combine teleportation is restricted to dimensional travel – Dr Kleiner's work in entanglement based site-to-site

VALVE INSIDER SPEAKS OUT!

[PCF] Is HL2: Episode 1 principally City 17-based? Are there going to be other locations to explore, or will we have to wait for future episodes?

[Doug Lombardi] Yes – Episode 1 returns Freeman, accompanied by Alyx Vance, to what are basically the ruins of City 17 and the Citadel. Helping members of the Resistance flee the city is among their tasks in Episode 1.

[PCF] What sort of time frame are you expecting for future episodes?

[DL] Episode 1 has been in production for some time. While we have not yet announced a date for that one, one of the key advantages of producing content episodically is that we're able to produce new experiences much more frequently, and offer them for a lower price. In the case of Half-Life to Half-Life 2, the delta between releases was six years. With the Episodes, that distance is likely to be months instead of years.

[PCF] Is the main push of this Episode about on working with the Resistance then? Are there any impressive collaborative setpieces you can spill the beans on?

[DL] Really the main push of Episode 1 is spending just about every minute with Alyx Vance. In Half-Life 2, you only spent a few minutes with her as you became acquainted with other members of the Resistance in City 17, and ultimately Dr Breen. In Episode 1, however, you will discover a whole different side of Alyx as the two of you engage Antlions, Zombies, Combine, Zombine and more.

[PCF] Are we in for more enemies and beyond the much-anticipated Stalkers?

[DL] Did I mention Zombines?

ATTENTION: DR. ELI VANCE PRIORITY THETA

Sir, I bring troubling news of possible collusion with enemy or unknown forces. You will of course have heard the stories about That Man, the Grey Man, the ominous Man, or simply the G-Man. The stories some of our young, and not so young soldiers have been known to tell around the campfire. I believe we finally have conclusive evidence that these are not merely pranks and folk stories, but solid, irrefutable evidence of third-party involvement.

Please find attached one of a set of four photographs taken by our recon teams based in the highway 17 resistance zone. Clearly showing Colonel Odessa Cubbage in open communication with a person fitting That Man's description. We have yet to challenge him on this, and beg your advice before proceeding.

Please advise with the utmost alacrity

Sightings of The Man have tripled since Freeman's reappearance; locations including the canals outside City 17, and the train yards near the Ravenholm mines. Our agents in the field also report seeing flickers of a man fitting this description during Breen's propaganda broadcasts. While not fitting the Combine's profile, it is notable that he always appears to be unarmed, sightings coming from secured Resistance and Combine facilities alike. Friend or foe, immediate investigation is clearly required.

somewhere dealing with the Dark Energy core. This fight is taking most of the city with it. We're helping the people flee the dangers, getting as many of the civilians out as we can, but the Combine forces left behind aren't sitting idly by while we do it. Reports of those new weapons are coming in thick and fast and whatever the Combine has floating around in that damn tower won't stay up there for long. It's turning

into all-out war – and this time there's no Breen to sign a surrender. Count on one thing, this second clash is to the death – and they've already got us on the brink of it.

There's knocking downstairs. Civil Protection's doing one of its sweeps. Anything else will have to come in a second letter. Expect it at the next stage of the rebellion, anything up to six months in the future. Unless of course, something goes horribly wrong...

innoculation confirmed, 19:03:23... combine transcription program complete... shutting down...
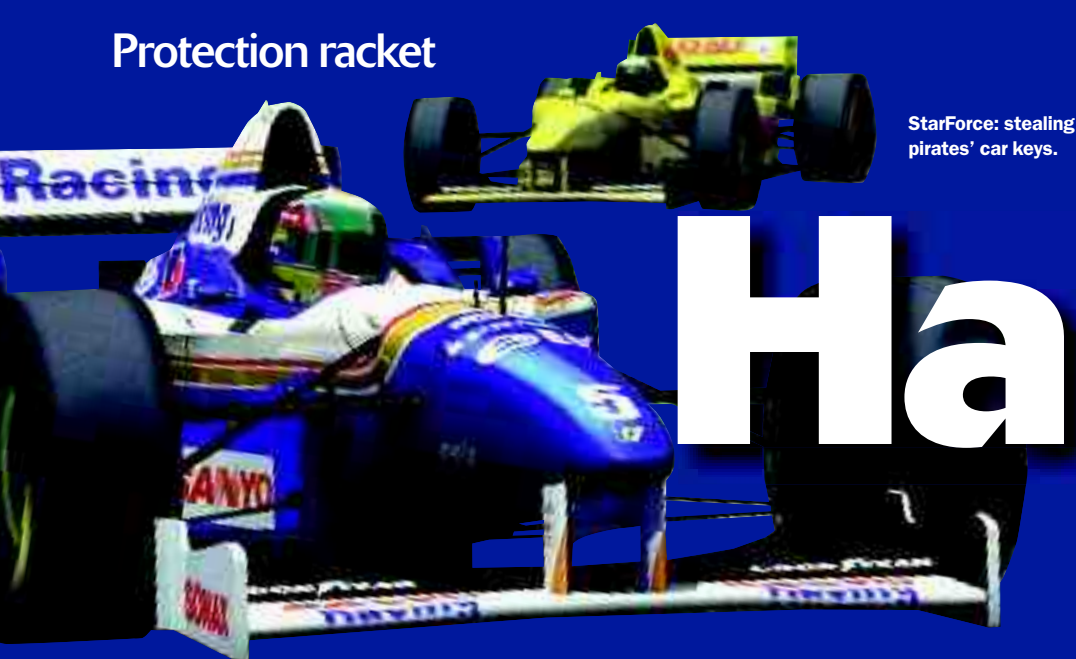
StarForce: stealing pirates' car keys.

Hands our

Want to protect your multi-million selling game from those nasty internet pirate types? Tim Edwards has the answer…

There is money to be made from piracy; and not just from hawking rips of your games down the local market. The Entertainment Software Association, or ESA – a US lobby group responsible for stemming the flow of cracked games – estimates that piracy costs the US games industry some $3 billion in lost sales. The problem is that copy protection techniques often prevent honest gamers from using legitimate copies of their games. Here are the pros and cons of the industry's favourite devices.

Is that FADE, or is your squad angry because you're just rubbish?

STEAM
Web activation no longer a pipedream

Manufacturer Valve

Web www.steampowered.com

Used by Valve (*Half-Life 2*, *Counter-Strike: Source*)

We say Volatile

How does it work?
Every time you start a Steam game, the client checks your CD key and registration details against a centrally held database. If you're a legit customer, you can play. If not, you can't.

Has it been cracked?
Versions of *Half-Life 2* are available in the usual piracy hubs of Bittorrent and newsgroups. However, to play on vanilla multiplayer servers you will need an authorised CD key or Steam account. Valve has been unusually proactive in banning those with fake accounts – tens of thousands of pirates who shared single CD keys have been kicked off the network.

Controversy?
Steam was introduced to the world by stealth. Even now, if you want to play a Steam game, you'll need an internet connection – so the Steam client can clock in with Valve base camp. That requirement was not made clear on boxes, or in the run up to *Half-Life 2*'s massively anticipated launch. Although most gamers have grudgingly accepted Steam, they have no choice, and a lingering resentment remains.

Does it have a future?
Valve keeps announcing exciting new PC games set to be released on the Steam platform. It's here to stay.

STARFORCE
The bad boy of DRM

Manufacturer StarForce Technologies

Web www.star-force.net

Used by Ubisoft (*Splinter Cell Chaos Theory*, *Silent Hunter 3*), Codemasters (*TOCA Race Driver 3*)

We say Black hole

How does it work?
StarForce protected games install a hidden series of drivers and dll files that check the disc' s image with that of the original 'glass copy'. The glass copy contains information that cannot be read by current disk emulation software or CD burners. StarForce also checks to see that drive emulation apps such as *Daemon Tools* are not running in the background.

Has it been cracked?
Individual StarForce games have been cracked, but only weeks after the full commercial release. As of now it's the most secure software DRM solution around; CD emulation software can't read and copy the hidden data from original discs. Quick ISO rips are impossible.

Controversy
Some users have accused the StarForce drivers of causing system instability – this is unproven and the company strenuously denies the allegations. So strenuously that its repeatedly threatened legal action against those who print them. There's now a potent Boycott StarForce movement. It has petitions and everything.

Here to stay?
If it keeps games off Bittorrent, but publishers will move on as soon as the crackers get wise.

off games!

Alyx won't play unless you have some protection.

Does the fact he's a DJ make this music piracy?

SAFEDISC
Not as safe as they'd like...
Manufacturer Macrovision

Web www.macrovision.com/products/activereach_games/safedisc/index.shtml

Used by Electronic Arts (*The Sims 2*, *FIFA 2006*)

We say Keep it secret, keep it safe

How does it work?
Original versions of the SafeDisc protection worked by detecting groups of bad data at the very front of a disc. If the data isn't present, the game refused to run. In more recent versions of the software, SafeDisc encrypts the .exe file, and hides the encryption key within those bad sectors. It also employs CD emulation blacklisting; if you're running virtual drives, SafeDisc throws a hissy fit.

Has it been cracked?
Repeatedly. We're now on the fourth version of the SafeDisc protection, and although fiddly, there is a recognised route to breaking all SafeDisc games.

Controversy?
The latest SafeDisc software requires a patch to Windows to operate. It fixes a bug in the Fast User Switching system.

Here to stay?
Macrovision has routinely upgraded its software to account for the latest hacks that appear. It's not going to stop.

FADE
Comedy errors ahoy
Manufacturer Codemasters

Web www.codemasters.com

Used by Codemasters (*Operation Flashpoint*)

We say Broken promises

How does it work?
Hilariously. Players with cracked copies of *Operation Flashpoint* find that their game gradually degrades while they play. Their guns don't aim straight, their graphics glitch, other soldiers appear to hover. The game doesn't crash – it just breaks.

Has it been cracked?
Yes, but it took virtually forever. FADE was a new type of copy protection, and as such it took months for the professional pirate teams to unravel.

Controversy?
Because FADE's methods were so unusual, some wondered if the copy protection actually existed at all. Were the errors actually caused by buggy software?

Is it here to stay?
Although only Codemasters games used the FADE software, its novel techniques have been adopted by other types of commercial DRM software since.

SECUROM
Not that secure
Manufacturer Sony

Web www.securom.com

Used by Atari (*Driv3r*)

We say Insecure

How does it work?
It's all about the bad sectors and disc signatures. Before the game code, a series of dodgy data tells the game that it's running from an original disc. It also checks for a unique signature, imprinted by a 'glass' master.

Has it been cracked?
Yep. SecuROM applications are mostly trivial to crack and run. Less and less new games use this protection model.

Controversy?
Disc emulation software works through a hole in the SCSI interface. Rather than fixing the hole, SecuROM takes the unusual step of blocking any SCSI devices, if they're combined with IDE drives. Despite this, the latest CD emulation tools have found ways of bypassing even this protection.

Does it have a future?
In game development circles, SecuROM has fallen out of fashion. Presumably, Sony will be back with a new version within months.
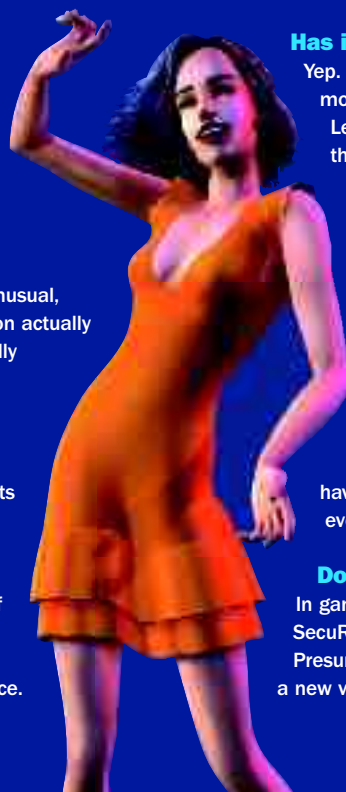
PCFormat reviews

All the latest games, gear and apps

60

USB hard drives

Our scoring system

0-19% Unusable or astoundingly rubbish
20-49% Largely not worth spending money on
50-69% Some decent features but uninspiring
70-79% Accomplished without the must-have factor
80-89% Outstanding. Awarded Top Gear or High Score
90+ Exceptional. A *PCFormat* Gold Award winner

Our key promises

1. PCF has the most thorough reviews
We've been reviewing kit and games for 14 years. With over 8,500 reviews written, we have the most talented, dedicated and authoritative teams in the business.

2. Integrity is paramount
We never trade pages for exclusives, or review games not signed off as finished by the publisher. Where we've looked at reference hardware, we'll make that clear in the review.

3. The PCFormat Gold Award
Only when a piece of equipment or game exceeds our expectations in terms of innovation, excellence and value for money does it get one of these coveted honours.

4. High Score/Top Gear
It's a misconception that only 90%+ is an essential purchase. Anything scoring 80% or higher is festooned with one of these, making it one of the month's most highly recommended.

5. We want to know what you think
We are PC fans writing for PC fans, so please share your thoughts on new stuff in our forum: **http://forum.pcformat.co.uk**

gold PCFormat

high score PCFormat

top gear PCFormat

92

Star Wars: Empire at War

PCFormat Experts

KIERON GILLEN
If he had his way, Kieron would run the whole country – which is why he loves *Rise of Nations* (p142) so much.
MOST WANTED
High office

JOHN WALKER
Tired of focusing his considerable ire on evil companies, John put *RF Online* through its paces instead (p94).
MOST WANTED
A robotic alter-ego
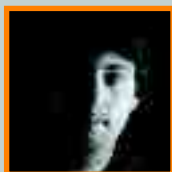
RICH COBBETT
Combine harvester Rich's *HL2 Episode 1* feature (p46) is so atmospheric you can almost hear the headcrabs.
MOST WANTED
HL2 Episode 2

JON HICKS
Battle For Middle Earth 2's nonsensical hobbit slaughter entertained Jon a great deal on p82. The cad.
MOST WANTED
Windows Vista

JIM ROSSIGNOL
Speed freak Jim's Watch This Space (p29) features rocket racing, which looks like the best sport in the world to us.
MOST WANTED
A rocket of his own

MIKE ABOLINS
Tech expert Mike brought his unmistakably cheery writing style to our hard drives round-up on p60.
MOST WANTED
More storage space

THIS MONTH

67 Gainward 6800GS

82 Battle for Middle Earth 2

68 Live IP webcam

70 Blackberry 8700g

71 >> **DUAL CORE IMAC** Intel's bite of the Apple
The result of Intel and Apple's recent tryst has arrived, and beautiful it is too. But how does the Intel Core Duo hold up in such a svelte case? Those currently covering their ears and shouting 'lalalalala' need to wake up and smell the smooth white plastic…

72 >> **SAT NAV MINITEST** Don't think and drive
If you're anyhting like us, your sense of direction will have been fried by too many whirling deathmatch frenzies a long time ago. As a result, driving anywhere outside of *GT Legends* poses a bit of a problem. Luckily, squinting at a map while parked down a dark country road can be a thing of the past as we put the best sat nav kits through the *PCF* wringer.
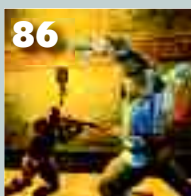
86 >> **D&D ONLINE** Slice and dice
Those who huddle around tables until the wee small hours playing *Dungeons & Dragons* can rejoice as the long awaited MMO arrives. Rather than having to lob around dice with more numbers than a phone directory, your PC does the stat crunching while you sit back and enjoy the action. Whether the purists will be satisfied is another thing, though.

88 >> **CRASHDAY** Far from wreckless
If causing your vehicle to cartwheel off the top of ludicrous concrete ramps sounds like your idea of a quiet Sunday in, then the absolutely manic *Crashday* could be the game for you. Forget the subtleties of simulations, this is an all-out, nitrous-snorting, rocket-fuelled arcade blast with a wanton disregard for realism.

PLUS

GREEN SCREEN

NVIDIA 7900GTX

Quicker, quieter, cooler: architectural efficiency is the mantra for the boffins at NVIDIA's labs. But what does that mean for raw performance?

Price £369 **Manufacturer** NVIDIA **Web** www.nvidia.com

The pendulum of 3D performance has been swinging for a few years now. NVIDIA had it in the bag with the FX series; then along came the 9800-series from ATI to steal the show. When the 7-series cards arrived last year, it seemed that team green had caught red napping, and the stop-gap, 110nm X1800 core did little to change matters. However, in the X1900XTX, ATI has posted a serious technical challenge to NVIDIA, and this, the 7900GTX, is the company's response. It's also the flagship card for NVIDIA's new family of graphics cards and, as such, is expected to be a bit of a star performer. Not only does it buddy-up for a sweet SLI pairing, new boards are in the pipeline (excuse the pun) which pack two 7900GTX GPUs onto a single card. Which, play-school maths tells us, makes for a quad-SLI setup. Your bank manager's going to *love* that…

However, don't get too excited just yet. Technically speaking, the 7900 isn't an altogether new generation of chip. It's simply the G70 core (that of 7800GTX fame) shifted over to the new 90nm semiconductor build-process (the 7800GTX was built to 110nm specifications). Imaginatively titled G71, it runs at a rather nifty 650MHz; what's more, it runs cooler and more power-efficiently than the G70, as you'd expect from more compact components. This card that trots along at pace, and doesn't moan and groan when the polygons fly or toast the inside of your chassis to a burnt umber.

POWER PLAY

It's also a full-on whopper with cheese. Looking, as it does, identical to the 7800GTX 512MB version, it's not one that'll tuck snugly into a Shuttle chassis. This honour is reserved for the other two cards in the family, the 7600GT and the 7900GT; spiritual and physical successors to, respectively, the 6600GT and 7800GT. Both of which were super cards in their own right, bang-on in the price-performance sweetspots for their classes (budget and midrange), and mature enough to be very affordable. While the 7900GT is a swifter, cooler product-refresh from the 7800GT, the 7600 is a serious performance upgrade from the 6600GT, bringing as it does improved, 7-series Shader Model 3 performance to the value-conscious end of the spectrum.

But it's the GTX that's grabbing the limelight, so let's crack on. On paper, it's not actually much more impressive-sounding than the 7800GTX 512MB; In fact, the memory is actually 100MHz slower – 1.6GHz rather than 1.7GHz. Memory bandwidth is also, curiously, down; 51.2Gb/sec to the 512's 54.4Gb/sec. They're both 24 pixel-pipeline cards, featuring 16 ROPs and eight vertex shaders. On paper, at least, they're similar, with the 512 promising to hold onto the performance edge.

In action however, the results tell you all you need to know. The 7900GTX just pips the 7800GTX 512Mb to the post, achieving 4759 3DMarks in *3DMark06* over the 512's ▶

HOW WE TESTED
The ultimate torture test

High-end cards deserve high-end tests, so we ran the 7900GTX alongside the 7800GTX 512Mb and X1900XTX in two of the most demanding applications available: *F.E.A.R.* and *3DMark06*. We also ran the same tests on the 7600GT, to give an idea of performance against a lower-end, SLI-capable card, Due to limited time, though, we weren't able to complete any other benchmarks, so won't be giving a final score and verdict on the technology until next issue – although we should have completed our tests by the time you read this!.

We ran *F.E.A.R.* at a screen resolution of 1,600x1,200, with 4x anti-aliasing and 16x anisotropic filtering running, and all other graphics options turned up to maximum. We also ran *3DMark06* at 1,600x1,200, with no anti-aliasing, instead opting for high dynamic-range lighting, in order to test overall synthetic performance. As ever, *3DMark* results shouldn't be taken as an absolutely decisive mark of real-world games performance, merely an indicator of the overall ability of the card or cards being tested. The system we ran the tests on featured an AMD FX-60 CPU, with 2Gb of performance DDR400.

> "F.E.A.R. at 1,600x1,200 is upped to an astounding 67FPS – that's a performance gain of 86%"
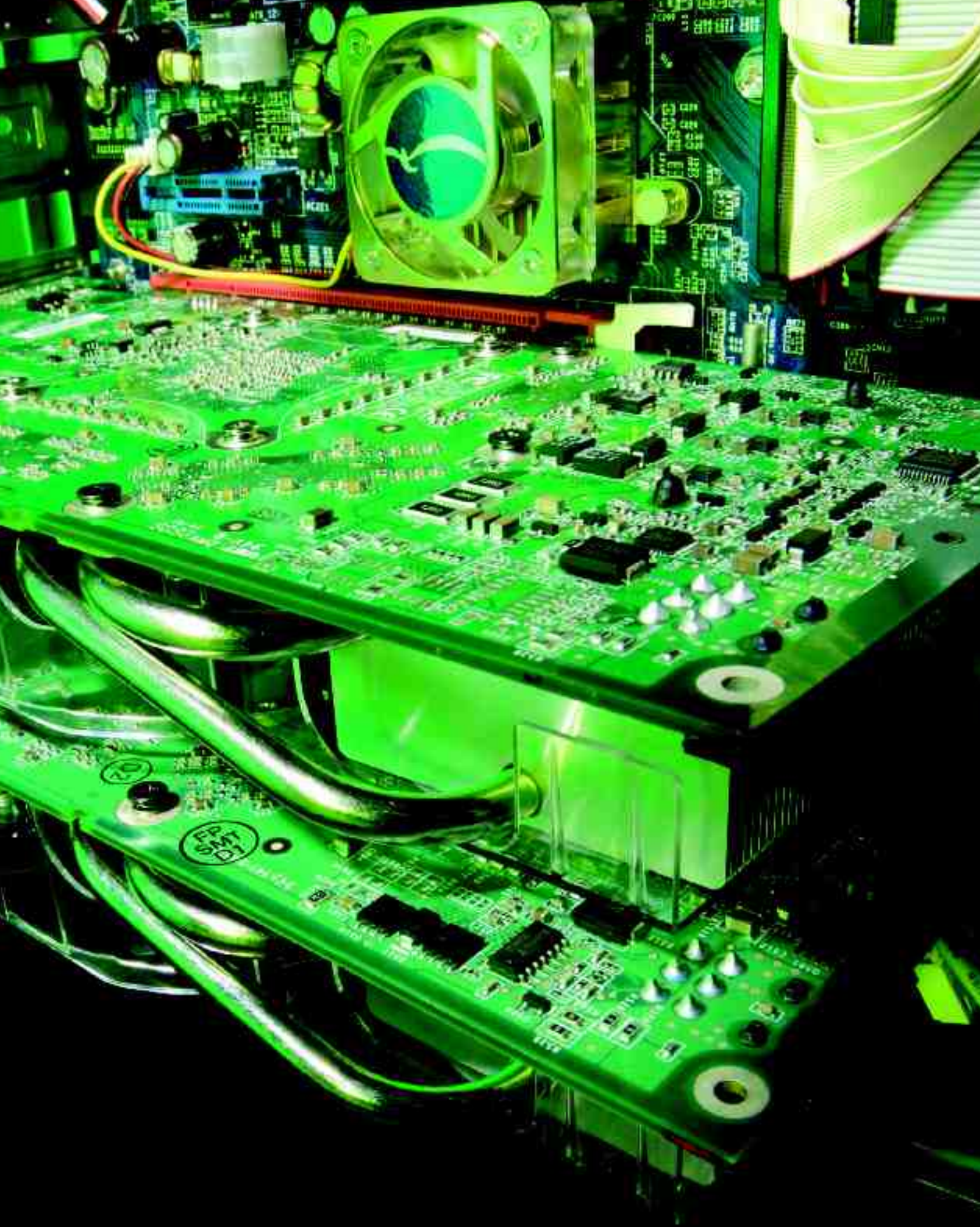
↘ 4690. Not a big difference, which suggests that, at our test resolution of 1,600x1,200, with all the options turned up to full effect, the performance difference is down to that crucial memory bandwidth debt. *F.E.A.R.* at 1,600x1,200, for example, ran at 36FPS on both of the cards.

DUAL IN THE CROWN

So at this level of altitude, do such things make an awful lot of difference? They do when you consider that the 7900GTX is a clear £100 cheaper than the 7800GTX 512MB. In addition, we're promised immediate availability for the 7900GTX – unlike the 7800 512MB, which is still very hard to find. However, add the X1900XTX into the mix, and a different picture begins to emerge. ATI's latest, with its curious combination of less pipelines (16), but three vertex shaders per pipeline, is capable of performing fairly wondrous feats. In the same *F.E.A.R.* test, the card fairly trucks along at an altogether sweet 49FPS, while just about matching the 7800GTX 512 in synthetic performance with a reasonably hefty *3DMark06* score of 4673. The lines are drawn.

"With a pair of 7900GTXs in SLI, you'll see startling games performance even at the highest video settings"

So, elusive as the 7800GTX 512MB is right now, let's disregard it, and assume the current performance-card options are the X1900XTX and the 7900GTX. In terms of real-world

Four-play
Take two graphics cards into the shower with you? How about four?
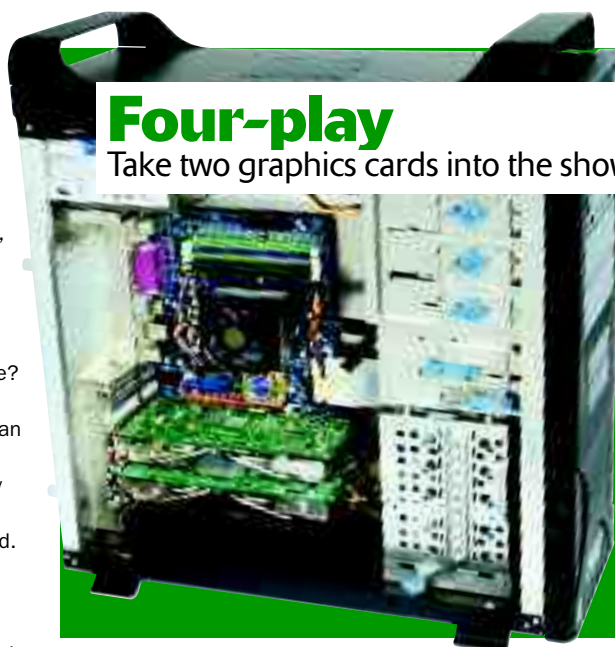
Yep, you heard us. The next iteration of the 7900GTX will feature two GPUs on a single card, making it four GPUs in an SLI configuration. Up until now, the only cards to have attempted this feat of engineering have been from bonkers performance manufacturers such as Asus, and supply of these has been immensely limited, making them rare (and extremely expensive) curios, rather than a serious gaming option.

Time to mortgage your house and sell elderly members of your family. Quad is coming.

top gear PCFormat

performance, the X1900XTX has the edge over NVIDIA's new boy, as we tested them both using the current most-demanding title on the shelves at a very high resolution. But cost is always a factor. And at £369 including VAT, the 7900GTX is just a better deal; your average X1900XTX weighing in, as it does, at around £410.

And there's another factor to toss in the cauldron: SLI. NVIDIA's dual-card system has chewed through its teething troubles, and is now mature, streamlined and effective. For certain midrange setups, it's also an affordable option, and depending on how prices fluctuate from month to month, a pair of low-end cards in SLI configuration can actually cost you less than a single high-end card on its own, while offering similar performance. The 7900 is the latest card to work in SLI, and as a

dual-card setup, it'll put a smile on anyone's face. Framerates in *F.E.A.R* at 1,600x1,200 are upped to an astounding 67FPS in SLI – that's a performance gain of 86%. Likewise, *3DMark06* at 1,600x1,200 with everything maxed out awarded a pair of 7900s in SLI a score of 8524 – an 80% rise over a single card. This hints that SLI performance is much improved on the new 90nm process, and pounds-per-pixels, an SLI setup simply offers better value than ever before. Looking at the benchmarks to the left of the page, the same appears not to be true of the 7600, but bear in mind that we put these cards through the same high-end tests as the 7900GTX, 7800GTX 512MB and the Radeon X1900XTX – all cards with stratospheric performance – just as a comparison point with a lower-end card. The 7600 is much more at home with resolutions of 1,024x768 to 1,280x1,024, and with lower settings. We'll bring you a full review of the 6600GT's successor next month.

ENERGY EFFICIENT

The only question mark left to address is how the X1900 performs in CrossFire tests, against a similar setup with 7900GTX cards in SLI. Now that the new RD480 motherboard chipset from ATI has reared its head (and it's being mooted as the chipset that will at last make CrossFire a serious competitor for SLI), we're going to see some interesting results. Again, we'll bring you a full breakdown of how the new RD480 boards performs next month, when we'll see whether or not CrossFire has reached the point where it's a serious option against NVIDIA's dual-card system. Until then, there's still no doubt in our minds: SLI holds court, both in price and performance

Green with envy
Benchmarks of all the cards that count

Card	
■ NVIDIA 7900GTX 512 (single card)	
■ NVIDIA 7900GTX 512 (SLI)	
■ NVIDIA 7800GTX 512 (single card)	
■ NVIDIA 7600GT (single card)	
■ NVIDIA 7600GT (SLI)	
■ Radeon X1900XTX (single card)	

F.E.A.R.
- 36FPS
- 67FPS
- 34FPS
- 17FPS
- 17FPS
- 49FPS

(1,600x1,200, 4xAA 16xAF, maximum quality)

3DMark06
- 4759
- 8524
- 4690
- 2734
- 4830
- 4673

(1,600x1,200, 16xAF, no AA, +HDR)

WE ARE FAMILY 7900GTX is the daddy
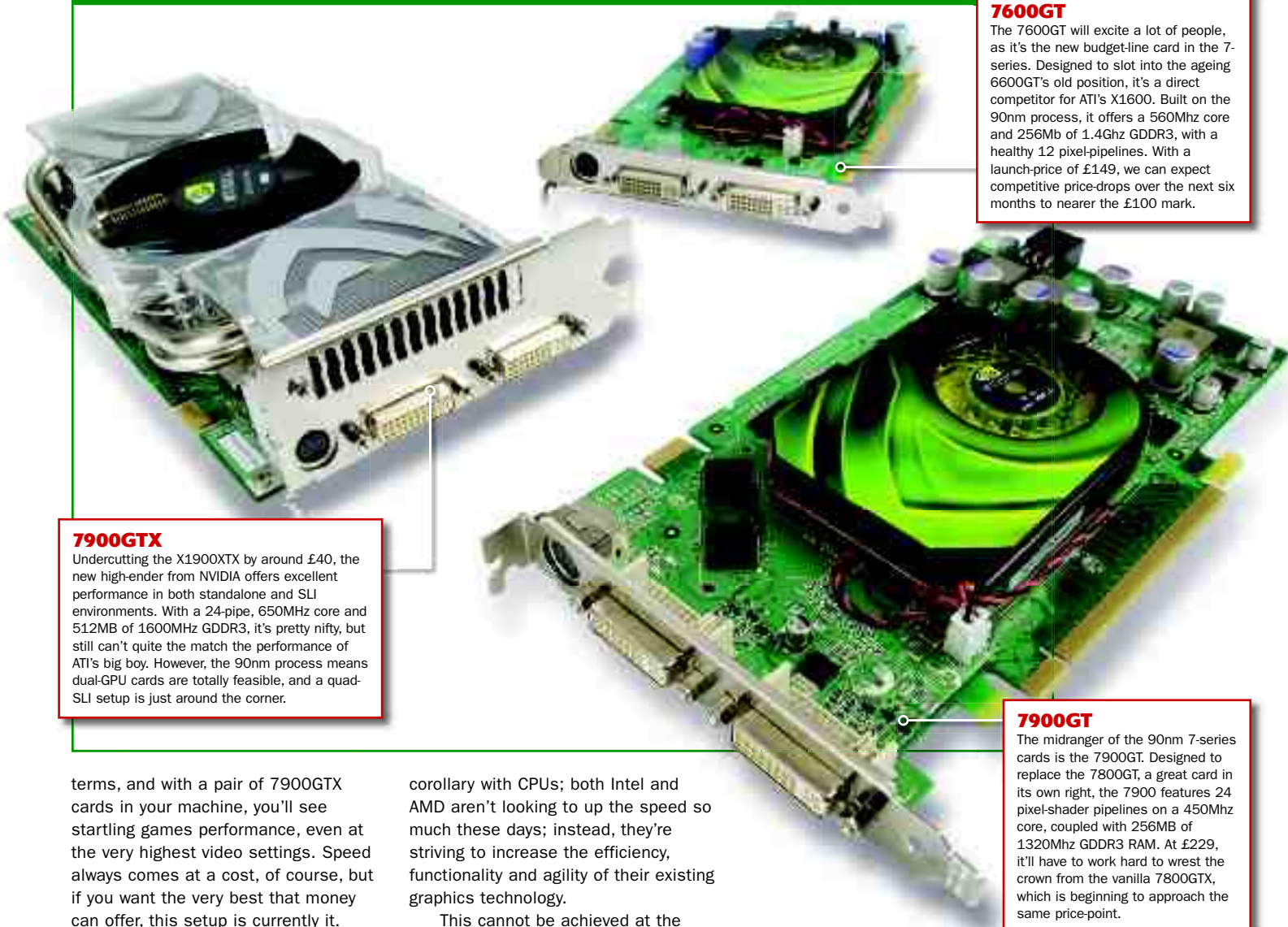
7900GTX

Undercutting the X1900XTX by around £40, the new high-ender from NVIDIA offers excellent performance in both standalone and SLI environments. With a 24-pipe, 650MHz core and 512MB of 1600MHz GDDR3, it's pretty nifty, but still can't quite the match the performance of ATI's big boy. However, the 90nm process means dual-GPU cards are totally feasible, and a quad-SLI setup is just around the corner.

7900GT

The midranger of the 90nm 7-series cards is the 7900GT. Designed to replace the 7800GT, a great card in its own right, the 7900 features 24 pixel-shader pipelines on a 450Mhz core, coupled with 256MB of 1320Mhz GDDR3 RAM. At £229, it'll have to work hard to wrest the crown from the vanilla 7800GTX, which is beginning to approach the same price-point.

terms, and with a pair of 7900GTX cards in your machine, you'll see startling games performance, even at the very highest video settings. Speed always comes at a cost, of course, but if you want the very best that money can offer, this setup is currently it.

In the 7900GTX, NVIDIA appears to be taking a new tack. While overall performance is a bit better than the previous generation's overclocked best, that's not where the serious technological developments have been made. Now the 7-series core has gone over to the 90nm process, it's simply a great deal more efficient. G71 actually features significantly fewer transistors than the G70 – 24 million fewer, to be precise. And of course this means less heat, less resistance, with reduced size and, crucially, noise output, as the cooling fan needn't work so hard to keep the chip sufficiently chilly to do its thing. Put a 7900GTX next to an X1900XTX, and you can only hear one of those cards – the howling turbine that is ATI's latest, taking over where Concorde left off. NVIDIA would like us to think that this marks a new direction for graphics card development. There's a certain

corollary with CPUs; both Intel and AMD aren't looking to up the speed so much these days; instead, they're striving to increase the efficiency, functionality and agility of their existing graphics technology.

This cannot be achieved at the expense of raw performance, though,

"The G71 actually features fewer transistors than the G70, meaning less heat, reduced size and less noise"

and it looks like ATI will retain its high-end lead for the time being. Check out our website at **www.pcformat.co.uk** for a comprehensive set of 3D benchmark scores and a final review opinion in the near future. **PCF**

GPU	G71
Ram	512MB GDDR3
Core clockspeed	650MHz
Memory speed	1600Mhz
Form factor	PCI-Express
Pixel pipelines	24
API support	DX9.0c, OpenGL 2.0
Shader support	HDR, SM2.0, SM3.0
Card size	Dual-width
Dual card support	SLI

PCF says... "NVIDIA's first 90nm GPU offers great, if not utterly transcendent performance. The development here lies in overall efficiency, and that means great things for future cards."

The hard stuff

Mike Abolins hits the streets, looking to score some china bytes for his information addiction

Hard drive space is like a class A drug these days, particularly if you've got a broadband connection. A gigabyte-a-day download habit quickly consumes any spare space you might have and, when you've used it up, you spend the rest of your time stealing megabytes from other programs and uninstalling important applications. Before you know it, your habit has eaten up your PC until it is only used as a reposit for the daily intake of useless information.

Thankfully, there's a digital media methadone available in the shape of external hard drives and now that a USB 2.0 port is an inalienable right and not a luxury, they've really come into their own. Thanks to the high-speed data transfer rates they make ideal receptacles for file backups, digital photo and video collections, downloaded music and even entire programs. They're reliable, safe and easy to lug around should you need to share files between two or more PCs and not muck around burning DVDs.

THE CHOICE
So, if you're jonesing for a fix, where d'you go? There are two main routes to take: the portable hard drive and the straight-up external. Both use a USB 2.0 connection but that's where the similarities end.

Portable models are, as their name suggests, much smaller thanks to the use of laptop hard drives which, while offering a usable capacity, are physically tiny. They're usually much more rugged, too, so if you're planning on tucking it into a laptop bag or your coat pocket on a semi-regular basis, you're on safe ground. The price you pay for this portability is three-fold. Firstly, they tend to be more expensive; secondly, they're not available in such high capacities due to the laptop hard drives; and thirdly, they have a lower data transfer rate.

The regular desktop external drives avoid these three issues by using regular hard drives, the same as you'll find in a desktop PC, meaning the capacities are huge and the data rates rapid. As for cost, they fare far better in terms of GB per £, too. Desktop drives aren't without their problems, mind. They're big and bulky, often require their own power supply and, in some cases, are quite noisy, too. Another gripe is that they get hot and unless the casing acts as a giant heatsink, some come with a cooling fan, which can be another noise issue entirely.

TOMORROW'S TECH
Still, because size isn't an issue when you're talking desktop external drives, they're where the exciting developments take place first. Wirelessly networked drives are appearing on the market and when external S-ATA drives become a reality, they'll offer all the performance of an internal model. Other developments include firmware to import digital photos and video directly from a camera, enabling you to quickly empty a memory card when you're out on a shoot. From there it's not a big step for an external hard drive to become a media player in its own right. But we're getting ahead of ourselves; it's time to check out the current crop of choice cuts.

HOW WE TESTED
Spin up, spin down

External hard drives come formatted using the FAT32 system which, while enabling you to connect the drive and begin using it immediately, just doesn't cut it these days. So a full, physical format was called for, using Win XP's Computer Management console (available via the Control Panel and Administrative Tools) to create a new partition and convert the drive to an NTFS volume that Windows XP could make optimum use of.

We then ran the File System Benchmark from within *SiSoft SANDRA* to determine accurate read/write speeds and data transfer rates. Like laptop battery life figures, the specifications quoted by manufacturers are best taken with a pinch of salt, so a benchmarking utility is essential to indicate how the drive performs in real life.

Then, because there's nothing like a true usage test, we copied 500MB's worth of files to and from the drive. Containing photos, music, video, compressed RAR files and *Word* documents, we had varied formats and file sizes to ensure realistic testing conditions.

gold
PCFormat

Extreme Lighted Combo
£143 **91**%
Manufacturer Western Digital **Web** www.westerndigital.com

Go ahead, we admit it: we're shallow. Stick a flashing neon light to something and we're no better than the be-hoodied yoof you see cruising up and down a high street near you in a pimped out Vauxhall Corsa, which has cost him and his parents' entire life savings. And we love it; you can program the cold-cathode lights to blend through the colour spectrum like a 70s jukebox or choose a colour and stick with it, possibly complementing any existing lights you might have modded your case with. Or you can just enjoy a strangely coloured glow from whatever nook you stick the Lighted Combo into.

It's simply a gimmick but the drive itself is a good performer, too. The 10ms access time leads the five drives on test here and the read and write speeds represent the maximum you're likely to be able to achieve at the moment. Until the external S-ATA connection becomes more widespread and really opens up the data bottleneck that USB 2.0 currently presents, it's as good as you'll find anywhere.

One curiosity, though: despite USB 2.0 theoretically offering a higher transfer speed of 480Mb/s (megabits, not megabytes) compared to FireWire's 400Mb/s, it's the latter that provides slightly higher data transfer speeds. So, if you do have a FireWire port on your PC, you can take advantage of the twin IEEE 1394 ports on the rear of the Lighted Combo. In fact, that's the only negative aspect of the drive; it's impressively quiet in operation and it didn't resort to blowing its cooling fan once during our few days' rigorous use of it.

Buffalo DriveStation
£130
Web www.buffalo-technology.com

87%

Unkind comparisons could be drawn with the lumbering beast after which the DriveStation's manufacturer is named. After all, its read and write times aren't anything to write home about and make Buffalo's quoted figures look positively fantastical. But the DriveStation has enough going for it to provide a certain charm.

Firstly, there's the styling. While the mirrored front isn't to everyone's taste, it's discreet and the power and status LEDs shine through when the drive's switched on, providing some quiet sophistication. The case, the sides of which are fashioned from aluminium, acts as a heatsink so it's left unpainted out of necessity. A small price to pay considering it negates the need for a cooling fan.

Secondly, there's the intelligent power management. While it runs on mains power, the DriveStation shuts down and starts up as your PC does thanks to the way it monitors power coming from your PC's USB bus. It's there when you want it and doesn't while away the hours by sucking up electricity waiting for a command. Thirdly, the software bundled with the drive is effective but minimal. A scheduled back-up utility is the only program you're likely to need and, refreshingly, you're not bombarded with third-party applications of limited functionality.

But the biggest factor in this drive's favour is the price – at £130 for a 300GB drive you're getting good value for money and compared to the others it's a bit of a steal."

top gear PCFormat

Brick Mobile
£108
Manufacturer LaCie **Web** www.lacie.com/uk

85%

We've all seen the PC enclosures that have been built from Lego and it seems that LaCie's designers, ever-willing to adopt an unorthodox aesthetic, have been inspired by it. Part of a range that includes desktop drives as well (in the shape of a rectangular sixer), the Brick Mobile is actually too good looking to hide away in a laptop bag somewhere. Available in red and white as well as the blue model seen here, it brings a light-hearted sparkle to your workspace.

It'll bring an equally vivacious sparkle to your file handling, too. Bus powered, the Brick Mobile takes up two USB ports in order to receive enough juice in order to spin up its 5,400rpm drive. That does mean you've got an extra lead to remember to carry with you at all times, a problem that Freecom's portable model avoids, but then the performance benefits of the higher rotational speed (5,400rpm as opposed to 4,200rpm) more than compensate for this. The time it took to transfer our 500MB's worth of files to and from the drive was substantially shorter than the Freecom. In fact, unless you've got a pre-lithium-ion powered laptop, you'll be unlikely to notice any great difference in the drain on your battery power, which is a saving grace.

The only criticism that can be levelled at the Brick Mobile is its build quality; not only is it probably too pretty for its own good, it doesn't feel quite as solid as the Freecom. But if you're willing to look after it, those good looks can be maintained and that stellar performance enjoyed all the longer.

top gear PCFormat

FHD-3
£110
Manufacturer Freecom **Web** www.freecom.com

62%

Anyone who thinks hard drives don't get hot enough to require some kind of cooling need an introduction to Freecom's FHD-3. While it's not loud on the same scale as nVidia's infamous original GeForce FX, it emits a steady whir that quickly becomes an annoying soundtrack to your life. Ever spent time in a server room at your office? If so, you'll have some idea of what we're talking about. And it's on constantly, unlike the Western Digital drive's fan, which is hooked up to a thermometer that's triggered only when the action heats up.

So it was an inauspicious start for this stackable drive. The uninspiring case is shared with several other Freecom products, enabling you to build your own little tower of aesthetic blandness. Packing the same USB 2.0/twin FireWire connections as the Lighted Combo, the Freecom is built around a Maxtor drive that offers the same 7,200rpm speed drive and 8MB cache. And while it didn't excel in the *Sandra* benchmarks, it posted an access time of 9ms.

It's not a big enough advantage to make up for the drive's shortfalls, though, as it just doesn't seem very well thought through. Along with the cooling fan, for instance, there's no power button; where the others will safely power down, intelligently waiting for any data transfer to finish first, you have to resort to simply pulling out the power lead. Now that's just basic. You'll be pulling it out anyway to shut the damn thing up.

FHD-XS
£94
Manufacturer Freecom **Web** www.freecom.com

80%

top gear
PCFormat

Now this is truly a portable drive; it's tiny, weighs next to nothing and is bus powered through a single USB port, unlike the LaCie Brick Mobile which requires the juice from two. In fact, it's so portable it makes the Brick look unwieldy. It doesn't need a separate cable to connect to your PC, for instance; the USB plug flips out from the side of the casing and extends on a couple of inches of wire, cutting down on the amount of crap you need to carry around with you.

Utilising the kind of drive you'd more usually find snugly encased within an iPod, the FHD-XS benefits from having a small capacity through which to read and write. In fact, it bests all but the Western Digital drive in terms of read speed, so there's no compromise on performance. The only limit you will hit is the drive's capacity. 18GB after formatting is a lot of space but it's only four DVDs-worth at the end of the day, and for just £14 more you can pick up the whopping 80GB LaCie Brick.

But back to the portability and, in particular, the build quality. Where we had slight reservations about the LaCie Brick, we have none here. The fit and finish of the casing is much better, with no gaping holes for dirt and dust to enter, and the whole unit just feels much sturdier. But unless you're a burly oaf with butter-fingered tendencies, the cheeky appeal of the Brick puts it just atop the tiny but sturdy FHD-XS.

Conclusion

A drive for every pocket, especially the really big ones

Maybe it'll come as no surprise to see that the Western Digital Lighted Combo is our chosen fix. When USB 2.0 external hard drive performance has reached a plateau, as the drives here show, it takes something a little bit special to stand out from the crowd. Whether that's something purely aesthetical or rather more functional like the Buffalo DriveStation's passive cooling, we want to see that extra detail.

Of course, the Lighted Combo didn't win our affections based purely on the flashing lights; it offers up great value for money and good, all-round performance, too. With nearly 300GB on tap after formatting, it's likely to be bigger than the primary drive in your PC. And despite being sandwiched between two neons in a clear acrylic case, it manages to stay chilled enough to avoid having the cooling fan fire-up on a regular basis. Something we wish the Freecom engineers would come up with.

The only point going against the Lighted Combo is the fact that it looks too nice to carry around; you know it'll only get scuffed. So if you're looking for something to accompany your laptop or tablet PC, it's the Freecom FHD-XS or the LaCie Brick. But while the Freecom is better suited to a life of being shoved into a scratchy pocket on the side of your laptop bag, it loses out to the LaCie model capacity and looks. Performance is stellar and, as LaCie have been building external hard drives for nearly as long as we've been playing with Lego, we've no doubts about its longevity. Meaning you'll find it that much easier to maintain your habit.

> **"It's likely that's it's bigger than your primary PC drive"**

Back to the future

The history of memory on the move

Hard drives have come a long way since the first IBM model, the 350 Disk File, that was introduced in 1956. The size of a washing machine, it was built around 50 24-inch platters that were accessed by a single head. While it only had a capacity of 5 million characters (not even a megabyte), it was excruciatingly slow. At the time, though, it was revolutionary, but due to its size, delicacy and power consumption, it was suited only to large offices.

It took another 25 years for a hard drive to be released that would be suitable for home computers, and it came courtesy of Seagate. The ST-506 was the first internal 5.25-inch drive and offered a whopping 5MB capacity when it arrived in 1980.

While the world waited for a hard drive that was viable for integration into a home system, external hard drives had become surprisingly popular. Anyone who used an Apple II or Commodore 64 will remember the alluring, if expensive, prospect of an SCSI drive. In fact, Apple systems boasted an external SCSI port right up until 1998 for attaching an external hard drive to, though the data transfer speeds were nowhere near fast enough to compete effectively with the IDE (Parallel-ATA) standard.

With the popular arrival of FireWire in the late 90s and USB 2.0 in 2000, external hard drives enjoyed a renaissance. The SCSI interface might well be ready for a comeback, too; Serial Attached SCSI, or SAS, is being championed as a new interface for network and enterprise storage. With transfer speeds of up to 3Gb (gigabits) per second, it's come a long way since the days of bulky cables and plugs. Whether it makes it into the consumer arena remains to be seen, though we're sure someone's trying to make it happen; after all, the current generation of external Serial-ATA drives currently only (!) reach transfer speeds of 1.5GB per second.

IN DETAIL Looking for perfection in every aspect

* Best in class

	£130 **Buffalo DriveStation** 87%	£108 **LaCie Brick Mobile** 85%	£110 **Freecom FHD-3** 62%	£94 **Freecom FHD-XS** 80%	£143 **Western Digital Lighted Combo** 91%
CAPACITY, FORMATTED	298GB*	37GB	74GB	18GB	298GB*
READ SPEED	28MB/s	31MB/s*	20MB/s	31MB/s*	31MB/s*
WRITE SPEED	18MB/s	24MB/s	26MB/s*	21MB/s	23MB/s
AVERGE SEEK TIME	21ms	7ms*	9ms	14ms	10ms
500MB FILE WRITE	39.9s	32.9s	32.4s*	59.8s	40.6s
500MB FILE READ	52.5s	40.6s*	56.2s	57.73s	56.6s
SPEED	7,200rpm*	5,400rpm	7,200rpm*	4,200rpm	7,200rpm*
GB PER £	2.46*	1.35	1.45	0.2	2.23
CAPACITIES AVAILABLE	120, 160, 250, 300, 400GB	1.35, 40, 60, 80, 120GB	160, 250, 320, 400, 500GB	20, 40, 60GB	320GB
WEIGHT	1,260g	225g	950g	150g*	1,170g
POWER	Mains	USB Bus Powered	Mains	USB Bus Powered	Mains
DIMENSIONS	53x173x164mm	20x130x112mm	44x175x144mm	12x85x85mm	44x219x154mm

XTC

gold
PCFormat

Powercolor Radeon X1900XTX

The first retail X1900XT is in, and it's fruity as a punch-bowl. No surprises there…

Price £410 **Manufacturer** Powercolor **Web** www.powercolor.com

After all the flib-dibbery surrounding ATI's too-little-too-late X1800, it's nice to see the outfit back on top form with the X1900XTX. This truly is a blistering card, though it is pricier than NVIDIA's new 7900GTX (see p56), to the tune of £40. However, the X1900XTX pips the new boy pretty much everywhere, especially at very high resolutions; its performance in *F.E.A.R.* is impressive to say the least. And if you need any other reasons to buy this card, here they are...

It will make your games sing. It will give you the most gorgeously gorgeous picture your monitor has ever displayed. It'll wake you up with a kiss, butter your toast, and give you an affectionate pat on the bum as you leave for work. OK, maybe not the last bit, but you get the picture; it's a do-it-all card, and its Shader model 3.0 and HDR performance are second-to-none.

PIPE UP
The pounding heart of the card is its 1.55GHz memory and 650MHz GPU. And that GPU is a curious piece of engineering. It effectively has triple the number of pixel-shader APUs across its 16 pixel pipelines; the lazy man's

interpretation is that it has 48 theoretical pipelines. It's a wee bit more complicated than that, but suffice to say, it can ninja its way through the brain-fuddling mathematical stuff better than any other card. The proof, as ever, is in the pud; 123 FPS in *Quake IV* at 1,280x1,024 with high quality options, 67 FPS in *F.E.A.R.* at the same settings, and a pleasing 82 FPS in *HL2: Lost Coast* with HDR. At real-world resolutions, no game currently available gives this card a proper run for its money. It's even slightly better than two 7800GTs in SLI – a setup which will cost you around the same. So if you really do have around £400 to spend on a single card – you lucky thing – then the Powercolor X1900XTX is a genuine no-brainer.   **Al Bickham**

GPU	r580
RAM	512MB GDDR3
Core clock	650MHz
Memory speed	650MHz
Pixel pipelines	16 (48 theoretical)
API support	DX9.0c, OpenGL 2.0
Shader support	HDR, SM2.0, SM3.0

90% **PCF says…** "It's the best card, at least until The Next Big Thing…"

Winfast A7800GS

A 7800 card for the AGP generation? Sounds too good to be true… and it is

Price £217 **Manufacturer** Leadtek **Web** www.leadtek.com

The scuffle for AGP supremacy ended with the X850 XT PE: ATI's 16-pipe monster. And in the AGP sphere, nobody's come close to offering that kind of performance since. But just when you thought AGP was done, along comes NVIDIA, with a GeForce 7800 reference for the Accelerated Graphics Port standard. There are clearly a lot of systems out there that still haven't been upgraded to PCI-E.

This model from Leadtek is an entirely standard version – no pre-overclocking, no bells and whistles, and thus, at a cheaper price than some you may see. So what does the A7800GS bring to the party? In a word (or four), Shader Model 3.0 performance. And that means HDR, and general graphical loveliness, wrapped up in a card that ought really to outperform the best that AGP has to offer.

BEHIND THE TIMES
However, the Radeon X850 XT PE needn't reach for the coat-rack just yet. For this card, despite the name, offers nothing like the performance of its bigger PCI-E siblings, the 20-pipe 7800 GT and 24-pipe GTX. The reasons for this are several. First up, it's a 16-pipe core, which we can only assume means that this GPU is a flawed version of the GT/GTX which fell

off the wrong side of the conveyor belt; just like lower-clocked CPUs. It's the lowest-performing 7800 we've seen and it also runs at 55MHz, slower than the GTX core – 375MHz rather than 430Mhz. Out of the box, it's no roaster, but the 7800 name will trick a few folk. The benchmarks tell an even less inspiring story. At 1,280x1,024 at high quality settings, *Quake IV* runs at a reasonable 77FPS, while *F.E.A.R.* creaks a little at 48FPS, and *Half Life 2: Lost Coast* fairly grinds at 31FPS. Performance-wise, these figures are roughly comparable to the X850XT, but fall shy of the X850 XT PE's raw power. Hardly an exciting entry to the AGP arena for the G70 core, and as it costs slightly more than the XT, it's certainly not a cheap way to get those Shader Model 3.0 effects. Besides, isn't it time you upgraded to PCI-Express?   **Al Bickham**

GPU	G70
RAM	256MB GDDR3
Core clock	375MHz
Memory speed	1,200MHz
Pixel pipelines	16
API support	DX9.0c, OpenGL 2.0
Shader support	HDR, SM2.0, SM3.0

70% **PCF says…** "Average. You get more poke for your pounds on PCI-E."

More benchmarks and details can be found on your coverdisc

CORE BLIMEY
Bliss 6800GS Golden Sample

Can a turbocharged core and a shedload of nippy RAM liberate Gainward's 6800GS from its 12-pipe bondage?

Price £183 **Manufacturer** Gainward **Web** www.advancetec.co.uk

The 6800GS, the latest reworking of the jolly green giant's 18 month-old GPU, is a decent midrange poly-pusher, and the bog-standard variety can be had for around £140 if you have the nous to trawl the online vendors.

That kind of price very much puts it in line for a place in the SLI sweetspot. And while a single card won't make your retinas itch with its framerates, it'll handle anything modern gaming has to throw at it, providing you don't notch every graphics option right up.

So why is this new take on the GPU, from performance-orientated Gainward, around £40 more than the basic card? The secret's in the numbers. 485MHz and 1300MHz to be precise, as those are the running speeds of the GPU and RAM. Gentleman-enthusiasts will spot that this is up 50MHz on the core and 300MHz on the RAM – which is also doubled to 512MB – over a standard 6800GS board. The extra 256MB still has all the performance-boosting power of neon windscreen wipers, mind you. Not even shader-intensive apps like *F.E.A.R.* really put that extra memory to work, and for the most part the bigger number is just an exercise in willy-waving to tickle in the punter pounds; except in *Half-Life 2*'s *Lost Coast* benchmark

there's no performance-enhancing modification. It's the component speeds which make for a pretty nippy card.

SHADY BUSINESS
The performance is most impressive with older technology, notably OpenGL apps. In fact, a pair of these cards in SLI actually outperforms a pair of 7800GTs in *Quake IV* and *Doom*; no mean feat for an older generation of GPU. In more modern apps however, such as *F.E.A.R.* and *3DMark06*, the 6800 GPU is held back a little by its age – and the shackles of its 12-pipe construction; it's just not a dedicated shader-cruncher. Those wishing to opt for high dynamic-range lighting in their games will see better performance from NVIDIA's 7-series cards, or the higher-end Radeons. That said, the raw performance is impressive, and there's enough grunt

"The overclock is a bona fide performance enhancement"

top gear PCFormat

here to provide pleasing games performance whatever the title. This is definitely an upper-midrange card, and tangibly faster than the vanilla 6800GS in every department. If SLI is a serious consideration for you, bear in mind that a pair of these will set you back around £360. The cheapest X1900 XTX will set you back a mere £20 more, and offers higher performance in modern games. As a single card for those on a budget however, the Bliss 6800GS is definitely a sound choice. **Al Bickham**

GPU	NV43
RAM	512MB GDDR3
Core clock	485MHz
Memory speed	1,300MHz
Form factor	PCI Express
Pixel pipelines	12
API support	DX9.0c, OpenGL 2.0
Shader support	HDR, SM2.0, SM3.0
Slot type	Single slot
Dual card support	SLI

82% **PCF says...** "A souped-up Gainward classic, but the technology's showing its age."

BENCH MARKS	QUAKE IV Frames Per Second	F.E.A.R. Frames Per Second	HL2LC Frames Per Second	3DMARK 06
BLISS 6800GS GOLDEN SAMPLE	87	27	52	2722
MSI 6800GS	76	23	35	2398
POWERCOLOR X1900XTX	123	67	82	4905

More benchmarks and details can be found on your DVD

WHIRCAM

Webcam Live! Motion

Welcome the future of webcams – prepare to feel moderately uncomfortable…

Price £100 **Manufacturer** Creative **Web** www.creative.com

The inevitable yet sluggish progression of webcam technology has finally led us to this – our every movement followed and monitored by a device that we chose to install. Techno-fear sufferers might be startled at the sight of the Motion in face-tracking mode. It follows your every move with Johnny Five-esque motorised twitching, and isn't the most comforting desk buddy. It's none too precise either, so the image usually jumps around like a toddler after a pack of Skittles.

EYES RIGHT

Switching to the more sedate 'clever' tracking mode reduces its hyperactivity, and you're really quite safe from the petrifying gaze of this sentinel, especially if it's a bit dark where you are. The CCD had trouble picking out faces if they're not well lit. It also has a tendency to fixate on your hands if they're a bit brighter, and woe betide you if you don a beige jumper.

While the software might need a few tweaks, Creative has the mechanics sorted. The claw-like convertible base adds to the versatility as well as the sinister appearance of the Motion, and it handles dangling from your monitor

just as well as standing menacingly on your desk. For the price, it's definitely nice to get a cam that doesn't have its angle irritatingly constrained by the weight of the cable, and controlling the pan, tilt and zoom yourself is moderately amusing. You can even stream to the Internet thanks to a tie in with Yahoo Messenger.

That motorisation obviously can't have come cheap, judging by the rest of the components. While the wide-angle lens catches a fair amount of what's put in front of it, the sensor is only capable of an unimpressive 640x480 picture, way below some of Creative's other models. We're seeing the lower end of the webcam market filling up with some technically advanced cameras, and the Motion is high amongst them, solely for its motorised base, but the picture doesn't quite cut it. **Alex Cox**

Horizontal range	**200° pan**
Vertical range	**105° tilt**
Lens	**76° wide-angle**
Sensor	**640x480 CCD sensor**
Extras	**Multi-purpose base**

74% **PCF says…** "Clever design, but don't expect a great deal of clarity."

Wireless PT NetCam

Keep an eye on your house while you're at work, without covering the place in cables

Price £395 **Manufacturer** Lindy **Web** www.lindy.com/uk

Webcams, unless they can produce high-res images, aren't a viable security measure. Blotchy, off-colour images of criminals that just happen to walk in front of your camera are worth nothing. That said, this IP camera produces excellent, felon-incriminating images, and has a built-in web server, so there's no need to leave a PC running to get your footage on the Internet. This also means it can be stuck anywhere: the wireless connection is a real boon.

SIMPLE SETUP

High-res video beamed live to the web is another kick in the teeth for bog standard webcams everywhere, and the range of motion is a few degrees greater than the camera opposite. The lack of zoom knocks it down a peg, though, and there's a reliance on an AC adaptor for power. This is more forgivable – batteries would last seconds, after all.

This camera latches onto your wired LAN by default, at which point the browser-based interface can be found at whatever IP address your router has assigned. The interface is simple enough, if a little obscure – getting your camera

hosted online reaquires a working knowledge of DNS services, and the actual picture is only visible via an ActiveX control. *Firefox* users will feel alienated, and *IE* buffs will need to tweak their settings. Tsk. Software is included for full-on multi-camera surveillance if you happen to have attracted some less-than-savoury followers, but the cost of more than one of these cameras is a big thing to spend your money on.

Despite a poor interface, this is a competent piece of kit. It's also unashamedly geeky, and has extra sensor inputs. You can switch the indicator lights off if you want to truly hide it, too. The motor is quiet, and the picture quality certainly beats most webcams hands down, even in poor light. It's a lovely camera all told, but we're still not sure the expense is entirely justified. **Alex Cox**

Sensor	**512x582 CCD**
Sensitivity	**1 lux**
Connections	**LAN/802.11g support**
Web broadcasting	**Via Dyndns**
Streaming	**MPEG4**

70% **PCF says…** "A few more options on this one, but it's more expensive, too"

"The NetCam's picture quality certainly beats most webcams hands down"

DOUBLE VISION

Kodak EasyShare V570

top gear PCFormat

The world's first dual lens camera is twice as nice, and double the fun

Price £249 **Manufacturer** Kodak **Web** www.kodak.co.uk

There aren't many 'world's first' stickers hanging around the offices of camera manufacturers, but Kodak has dug one out for the EasyShare V570.

The dual lenses allow for an impressive 5x optical zoom, utilising one lens as an ultra-wide angle and the other reserved for telephoto. With no protruding zoom lens, this keeps the look sleek, sexy and small. At its widest setting of 23mm it can make even the smallest room look imposing. Full zoom takes the focal length to a respectable 117mm.

The camera has 19 automatic scene modes from flowers to fireworks – enough to keep you busy as the months rattle by. It's let down by the exclusion of any manual shooting modes, but this is a dedicated snapper after all. That said, we found the panorama feature a superb one. Take three images at the widest setting and it stitches them seamlessly together, creating a 180 degree panorama.

The overall quality of images is good, matching most cameras in the £250 price bracket. The video recording function is also a bonus, though of course, how much video you take depends on the size of your MMC or SD memory card.

It's an attractive camera and will sit pretty on your desk, hobnobbing with MP3 players, PDAs and anything else

manufactured in the ubiquitous silver and black. Mounted in the somewhat plasticky USB 2.0 dock, it syncs effortlessly with your PC, or acts as a standalone viewer.

EASY PEASY

The whole package does what it says on the tin, and the EasyShare software is a doddle to install. Printing, uploading and emailing your embarrassing moments or greatest triumphs is easy. Combined with the V570's picture modes it makes the whole operation as simple as, well, taking a picture.

While the camera is great fun and has a couple of slick features it's a bit too basic for advanced users. It's also hamstrung by the hefty price tag. On the other hand, if you long for the photographic equivalent of plug-and-play with quality results, the V570 will impress. **Ben Birchall**

Megapixels 5

Optical Zoom 5x

LCD Screen Size 2.5in

Storage MMC or SD card (32mb Internal)

Video Resolution 640x480 (VGA) or 320x240 (QVGA)

Dimensions 101x49.8x20.4mm

82% **PCF says...** "Instant usability housed in a sexy compact camera."

Sanyo Xacti E6

This sleek 3-inch screen digital camera makes viewfinders a thing of the past

Price £250 **Manufacturer** Sanyo   **Web** www.sanyo.com

How many times have you taken a picture while squinting through a tiny viewfinder, only to find that you cut something vital out? While the new Xacti E6's massive 3-inch LCD screen won't transform you into Lichfield overnight, it certainly helps you see the bigger picture.

If composing your pictures using the bright and clear LCD screen isn't easy enough, one flick of a switch brings up a help menu, which guides you through the camera's features. Turning on the audio guide activates voice that tells you exactly what you're doing in friendly, female, GPS-style tones.

The camera has seven modes for subjects such as sport or landscapes, and one automatic setting for general shooting. The most useful dedicated mode is one that takes four pictures of the same subject using different exposures – you get to choose the best one. Navigating between different functions is laborious, but what will really confuse you is the annoying 'touch sensor' shutter button that Sanyo has been raving about. A feather-light touch from your trigger finger will activate the focus controls and ready the

camera for a picture. We battled with it for five minutes, and just handling the camera sent it into an autofocus frenzy.

SENSIBLE SOFTWARE

The clutter-free silver casing is basic and fits snugly in your palm. Connectivity comes via a mini-USB2.0 port, although taking out the SD card is easy enough if you prefer to use a card reader. Picture quality is very good, although there is some noise when zoomed in. The supplied Ulead software is a great bonus, even if it's not the pro version. It won't fail to bring your pictures alive and drag your digital albums into the 21st Century. It's easy to install and packed with great features. Matched with the E6's style and that absolutely huge 3-inch screen, the whole process of picture taking is made much more pleasurable. **Ben Birchall**

Megapixels 6.37

Optical zoom 3x

Digital zoom 4x

LCD screen size 3in

Storage MMC or SD card (16MB internal)

Interface USB 2.0

Dimensions 97.7x59.5x22.8mm

76% **PCF says...** "A huge screen, but lacks really useful features."

There's no denying that this is a very desirable camera, and its derrière looks just as good.

TOO SLOE
Blackberry 8700g

Is the future going to be as easy as pie, or will Blackberry find itself in a bit of a jam?

Price £380 **Manufacturer** Research In Motion **Web** www.O2.co.uk

The ubiquitous Blackberry wireless email device could be about to suffer, after what has been a phenomenal period of success. With three million subscribers in the US alone, it has a practical stranglehold on the business world, but recent events have conspired to throw a massive spanner in the works.

The threats to its crown are twofold: just as the service's parent company, Research In Motion, steels itself against accusations of patent infringement, rival companies are aiming to improve on the company's flagship concept of a constantly updated mobile inbox. RIM has suggested that with a back-end change, the service should continue even if the infringement claims are upheld, but whichever way the case goes, the entire operation is in severe flux.

Against that rather unfortunate political backdrop, O2 has released a new model of the Blackberry, the 8700g, on its network. Boasting an Intel XScale processor and 64MB of built-in flash memory, this has the most grunt and storage space of the entire range and is a clear stab at the more powerful Windows Mobile-enabled organisers. Despite being a good deal smaller than the average PDA, the 8700g has a bright 320x240 screen, a full QWERTY keyboard

and, thanks to a thumbwheel and escape button, can be used with one hand.

LACKING FUNCTIONS
The main issue we have with the Blackberry 8700g is that while the hardware is reasonably impressive (though nowhere near as powerful as a high-end PDA), the core functionality has barely changed. There's no equivalent to *Word* or *Excel*, meaning that as a mobile inbox and web browser it works fine, but as an actual productivity tool it's nearly useless. Combine that with the rudimentary synchronisation software, and you've got a disappointing package. The service is sold on the fact that you pay a subscription to have email delivered directly to your Blackberry, but with the alternatives growing in both strength and number, the era of an all-conquering Blackberry could be drawing to a close. **Mike Channell**

Processor	Intel PX901
Dimensions	110x695x195mm
Display	320x240
Memory	16MB SDRAM
Storage	64MB

60% **PCF says...** "Great at the basic stuff, but we expected far more."

SILVER PLATTER
RaptorX

Ever wondered what it was that made your hard drive whir? Now you can see it

Price £242 **Manufacturer** Western Digital **Web** www.westerndigital.com

How our little geek hearts leapt like lambs when we saw this little block of technology in action! The window on the top of the Raptor X allows you to watch the arcane inner workings of a hard drive – namely the super-speedy spinning of the platters, and the read/write needle zipping back and forth like a glue-fuelled Dalek arm.

It's fascinating, as you can't really believe that something so small can move so fast. You should see the little chap go when you're defragging the hard drive: it turns into an intangible blur.

HIGH-SPEED THRILLS
So it's a short-lived pleasure; hey-ho. There's still plenty to get excited about with the Raptor X though. It's one of Western Digital's 10,000 RPM drives, so as you might imagine, seek times are that bit faster than those of a standard IDE or SATA hard drive. This essentially means quicker data transfer – in particular, faster games performance, chiefly when your PC is piping data from the drive into the system memory, to load a new geographical area for

instance. It's noticeably quicker than a standard drive, and we found that the drive is ahead of a generic 7,200RPM model by a clear few seconds in level-loading.

Whether or not you're ready to pay for that extra performance is a matter we cannot advise you on. £242 for a 150GB hard drive isn't really pocket change, seeing as you can pay less than £100 for a 7,200RPM 150GB SATA drive. The choice is yours – if you really must have the best, this is it. And we suspect that a pair of these in RAID configuration would be about the fastest setup on the planet – until proper solid-state hard drives hit the scene, at any rate. So there you go. It's a little ripper of a drive, and it looks pretty neat, but it's by no means a bargain. **Al Bickham**

Capacity	150GB
Speed	10,000 RPM
Interface	SATA
Size	3.5"
Cache	16MB
Access time	102ms
Extras	Native Command Queuing
Game-load decrease over 7,200RPM	5 seconds
Write-speed decrease over 7,200RPM	3 seconds

84% **PCF says...** "A speedy drive with a fun gimmick, just a bit costly."

> "You should see the little chap go when you defrag the hard drive"

> "confirms Apple's intention to move your principal computer out of the office and into the living room"

GREAT WHITE HOPE

Intel iMac G5

Apple's beady eye falls on the media centre market, but does its bunk-up with Intel herald a bright new dawn in the battle for the nation's living rooms?

Price £1,230 **Manufacturer** Apple **Web** www.apple.com/uk

Don't worry, we've not gone totally insane. Yes, this is a Mac review, but we're still good old *PCFormat*, and there's a valid reason for this borderline treasonous exercise. Hang in there. Deep breaths.

See, Apple is now cooking on dual-core Intel processors, with modern PC-standard graphics cards (in this case, the X1600 we reviewed last issue, which achieved 68%). The Mac is also HD-ready, coping adequately, if unspectacularly, with 1080p content, and the kind of high-end design apps Mac users hold so dear.

The new Tiger OS interface is as slick and intuitive as expected, and even this 2GHz, 512MB RAM model handles high-stress tasks with enviable aplomb; we even had it running every *iLife* app simultaneously, while downloading and viewing 1080p movies, burning CDs from *iTunes* and surfing the net – secretly hoping it would fall over, and our PCs would reign supreme – but no joy.

Given the cost, the X1600 is a tragedy. The integrated 20-inch display is reasonably crisp, but we've seen crisper, if we're honest. Depending on your tolerance for brilliant-white hardware,

you'll either love it or hate it. We're in love with the Apple Remote, and the way it sticks magnetically to the iMac is a stroke of genius.

MOVE OVER

Another aspect worthy of note is the fact that it confirms Apple's intention to move your principal computer out of the office and into the living room – a process which began in earnest with the bacon-saving Bondi iMac in 1998. To this end, Apple has squared up to Microsoft's Media Center with a new GUI

it calls FrontRow. This basically converts your shiny new Intel-assisted iMac into a media hub, enabling basic access to music, video files, DVD burning and playback. It works well, and is very similar in operation to the menu system on an iPod, only far prettier.

Apple's intention seems to be to make everything as intuitive and glossy as possible; to get as many computer users on the media centre bandwagon as it can. As a device, it's not as powerful as a £600 PC, but as a user experience, it's hard to fault. **Alex Jones**

Take your seats
Turn your house into a cinema (of sorts)

This new front-end exudes the usual Apple smoothness, and apes the clickwheel/playlist interface popularised by *iTunes* and the iPod. Apple's bold claim is that it enables you to access all of your stored movies and DVDs from one place, and even download trailers to show your friends.

CPU and memory 2GHz Intel Core Duo processor, 512MB 667MHz DDR2

RAM Expandable up to 2GB

Storage 250GB 7,200rpm Serial ATA hard disk drive, 8x DVD+/– RW SuperDrive

Comms Built-in 54Mbps AirPort Extreme card (802.11g standard)

Display 20-inch widescreen TFT, native at 1,650x1,050

Graphics and video ATI Radeon X1600, 128 MB of GDDR3 video RAM

Extras Built-in iSight camera

85% **PCF says...** "A fast, robust processor swathed in a drop-dead gorgeous design."

Lost & found

Now that affordable satellite navigation systems are commonplace, there's no excuse for getting lost. Simon Pickstock explores the budget options

The most popular gadget pressie for Christmas 2005 was satellite navigation, and with prices commonly under £300, it's not hard to see why. Let's face it, in the UK we have a particularly obtuse system of road signage. You can follow directions for some historic point of interest for 20 miles, only for the signs to peter out a few miles from your destination, leaving you to wander the country lanes aimlessly until you run out of fuel, the will to live, or perhaps both.

In rural areas, signposts were removed during the 1940s to confuse any invading Germans. In many places, they've never been replaced, so even if you do have an idea of where you're going, should you be diverted from your course due to road works or a lorry that's

shed its load, you can guarantee that at some point, you'll deviate from your new route and end up inextricably lost.

ROUTE DIRECTORY

Even if you can read a map without turning it upside down, there's really no need to rely on old fashioned paper any more. However long or short your journey, sat nav is the future and it's here today. Besides which, one of the best things about most sat nav systems is that they can be used as speed trap detectors. Oops, we mean they can divulge the location of 'safety' cameras, enabling you to drive within the speed limit and behave like a responsible citizen. Some can even store music and picture files, so even if you do get lost, at least you'll be entertained. In addition, as virtually all

devices take some form of memory card, they can be updated with the latest maps for whichever region you choose to visit, meaning the device you buy today should last you many years to come.

HOW WE TESTED

In order to ascertain how each unit compares, we used three different routes. On each outing we would also deviate from the suggested path to see how fast and how accurately the sat nav systems could get us back on track. A further test route was also programmed, but not driven, from Bristol to Suffolk. The most obvious route is along the M4, M25 and M11 motorways. We wanted to see which route each device would choose, and how easy it would be to change the route to our preferred alternative. We also timed how long it would take to get a location fix after the unit was turned off.

Photography Andy Short

RoadMate 300 £270

It's surprising that the RoadMate 300 has no battery, so you can't use it away from your car or a power point. It also has one of the flimsiest windscreen mounts, meaning it vibrated annoyingly while we were driving.

This had the knock-on effect of detecting many of our screen taps as double or triple presses, so we resorted to hand-holding the device when entering addresses. Journey calculation is fast and it doesn't take long for the route to be recalculated when you go off-piste, but directions are premature ("in 1.8 miles, turn left!") and there was no easy way to change the planned route to our alternative. Nice and cheap though.

Navigation software NaVteq

Screen size 3 inches

Memory 512MB

Accessories Windscreen mount, mains and in-car power adaptors, USB cable, mapping CD

75% **PCF says...** "Cheap and cheerful, but the lack of a battery and the poor mounting bracket are serious oversights."

Traffic Assist £330

This is the most polite GPS device we've come across ("please turn left in 200 meters!"), but it's unforgivably slow. Each screen tap is agonising.

At heart it's a Windows CE device, and we feel that's part of the problem. Fortunately, the mapping's not bad, although route recalculation can be glacially slow at times. We're not entirely convinced by the ambient light-strips on each side, or the ability to play MP3s and display pictures while you're motoring, but it does have the sturdiest mount of the lot. One neat feature is the ability to display the current speed limit (where known), but it's not enough to redeem its sluggish ways.

Navigation software Navigon

Screen size 3 inches

Memory 1GB

Accessories Windscreen mount, mains and car power adaptors, USB cable, mapping DVD, spare battery

65% **PCF says...** "It's well put together and has some nice features, but the cumbersome interface and all-round lack of speed lets the side down."

My Pal A636 £320

Essentially a Windows Mobile 5.0-based PDA with a fold-out GPS antenna, this is a true multi-function device. The portrait-shaped screen is also in the most logical orientation for driving.

An icon-driven interface and text entry using the stylus make the unit easy to use, although some of the icons are a bit small.

Like most of its rivals, the A636 is also not easy to change routes on. Should you choose to, you might be warned about exceeding the speed limit, but we found it kept telling us off for going over 30mph in a 60 zone, so the function was turned off. That aside, if you want good software,and PDA functionality, the My Pal is hard to beat.

Navigation software Destinator

Screen size 3.5 inches

Supplied SD card 256MB

Supplied Accessories Windscreen mount, mains and car power adaptors, USB cable, Map disc, protective cover

88% **PCF says...** "Fantastic battery life and genuine multi-function PDA features. All it sorely lacks is similarly impressive software."

Turn over for the winner...

gold PCFormat

WINNER!

TomTom One £250

Manufacturer TomTom **Web** www.tomtom.com

"A sat nav unit that will get you from A to B with the minimum of fuss"

If you're after a sat nav unit that will get you from A to B with the minimum of fuss, look no further. The interface is a breeze, and it's the only unit that enables you to easily pick an alternative route, by choosing your own waypoint.

Not only that, but it's fast, accurate, and has one of the best mounting systems on test. There's even an option to flip the screen, should you need to mount it upside down. A Bluetooth connection enables you to connect to your phone for live traffic updates (at extra cost), and the battery gives around four hours of life, if you want to use it in pedestrian mode. Considering all the features and the price, there's no other choice.

Navigation software TomTom

Screen size 3.5 inch

Memory 512MB

Accessories Windscreen mount, in-car power adaptor, USB cable, mapping CD, live traffic update facility (at extra cost)

92% **PCF says...** "Quick, intuitive, easy to use and reliable. Install one of these in your car, and you may never take a wrong turn again. Brilliant in all respects."

Pocket money pages

SUB-£100 GOODIES FOR THE BARGAIN HUNTER

Logitech G15 Gaming Keyboard

It's the all-singing, all-dancing Incrediboard!

Price £45 **Manufacturer** Logitech **Web** www.logitech.com

This isn't the first programmable-macro keyboard to come through *PCF*'s hardware-shaped letterbox, but it's certainly one of the most interesting. Out of the box, the G15 features 18 extra keys that can be programmed with custom functions. There are three multipliers too, taking the total number of programmable keys up to, ooh, billions probably *[54 – Basic Numeracy Ed]*, but that's nothing compared to the potential of the flip-top LCD panel. The code for it is open source, and there's a stack of apps available on the web. How about an MSN Messenger monitor that displays text so you can see who's just come online while you're gaming and never miss a call to arms by your clanmates? It's up to you.

The board has a matte, rubberised finish, and the glowing keys are a godsend for late gaming sessions. It's not too pricey either, coming in at under £50 at most e-tailers. There have been reports of the finish peeling on some early models, but this has since been rectified in later iterations.

top gear PCFormat

Display 160x43 pixel backlit LCD

Dimensions 21.5" x 10.5"

Ports 2 x USB 2.0

Extras 18 programmable keys, volume wheel, backlit play/skip keys

89% **PCF says...** "If you're about to splash out on a keyboard, get this one."

Lindy USB Fan

Price £8 **Manufacturer** Lindy
Web www.lindy.co.uk

Clearly Lindy feels that there are a lot of people who get hot and bothered while sitting in front of their PCs. We will concede that a good hour of high-contact deathmatching can leave us yearning for a gentle breeze. This fan has a pleasing amount of poke, producing a directional cone o' coolness wherever you point it. Our reservations are that the bendy cable is rather heavy, putting some strain on your USB ports, and that the fan itself is quite noisy. If you must stay temperate while at your computer, we suppose this is a reasonable (and portable) option but, unless you're moving to Morocco, we can't see it getting much use.

60% **PCF says...** "Does the job, even if its job is ridiculous."

Avery Afterburner labelling kit

Price £20 **Manufacturer** Avery
Web www.europe.avery.com

top gear PCFormat

When this arrived in our office we were quick to dismiss it, but it's an extremely handy piece of kit. The software allows you to create a CD label by dragging in images and text, which you can then print onto sticky label sheets. Once this is done, the 'science bit' begins. Rather than mashing the label on, you place the label on a bending plastic contraption, plop the disc on top and then press down. This ensures a smooth, centred disc label which. If you want to make that DVD of your family look worthy of general release, you could do much worse than trying this simple but effective device.

89% **PCF says...** "Cheap, but very cheerful. Well worth a look."

Belkin Bluetooth Adaptor Version 2.0

Price £25 **Manufacturer** Belkin
Web www.belkin.co.uk

top gear PCFormat

Belkin claims this can achieve speeds of up to 3Mbps. All well and good, but for it to be effective, the device you're pairing up with must also use the newer version of Bluetooth. The software and drivers are perfectly functional and the standard Class-2, 10-metre range seemed about right as we meandered around the office uploading guerrilla camera phone pictures. It's also worth mentioning that one benefit for laptop users is that the power consumption has actually dropped with version 2.0, meaning that you can become a wireless terrorist on the train without boiling your batteries.

85% **PCF says...** "Great, but of limited use at present."

Creative Gigaworks T20

Price £65 **Manufacturer** Creative
Web uk.europe.creative.com

top gear PCFormat

Traditionally, Creative's GigaWorks brand has delivered sound quality to match its prices, and the T20 is no exception. This is a sturdy and attractive pair of speakers that produce rich sound which sets them apart from a great many tinny tweeters. Most importantly, the midrange isn't lost, meaning that they're a great option for music. The lack of a sub is noticeable, and for this price perhaps you might expect to get a 2.1 set. You could even buy a naff 5.1 rig for the same money, but if you're someone who won't settle for a drop in quality, this is probably the best stereo set available.

88% **PCF says...** "Pricey, but the sound quality is excellent."

RATINGS BEYOND THE WARRANTY
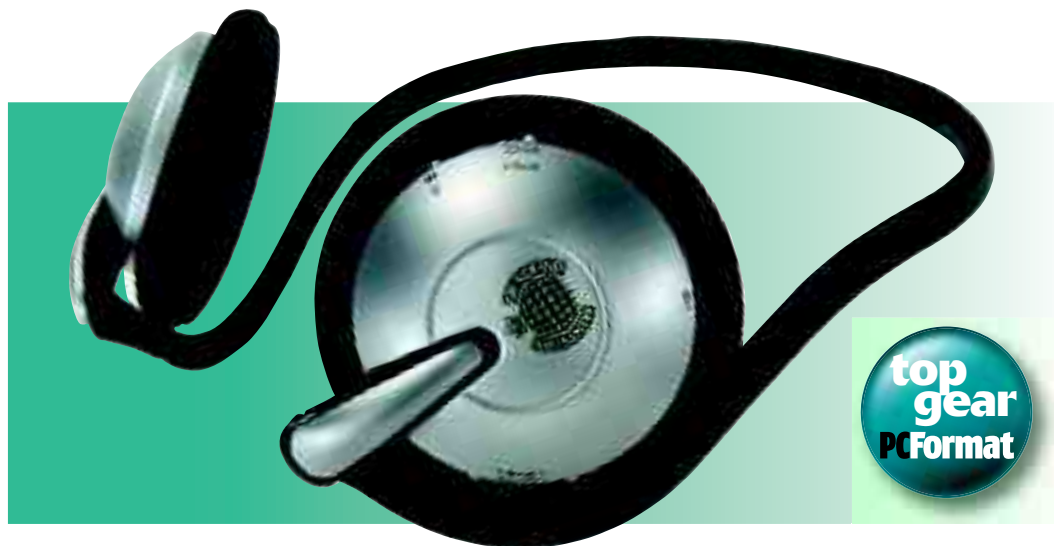
Ministry of Sound MOSMP119

Throw shapes in the church of dance – wirelessly

Price £30 **Manufacturer** The Ministry of Sound **Web** www.ministryofsound.com/audio

Venerable dance empire **Ministry** of Sound's latest wheeze is a wireless headset with integrated MP3 player. It's not a bad deal, though the 128MB of built-in storage for your MP3 or WMA tunes fills up quickly (you'll get about 30 tracks on there). It's great to be free of cables, though, and the cans are well made and stylish. Sound quality is acceptable, too, especially when you turn up the bass boost. The cans are very easy to use: simply charge up the battery via the supplied USB lead, copy over music tracks in Windows and away you go (you don't even need to do this, as the headset comes pre-loaded with the Chillout Sessions. Yay!).

That said, the tiny, fiddly control buttons require the dexterity of a concert flautist. Oh, how we laughed as we turned the damned things off instead of turning them up for the 100th time. It's the lack of storage that really rains on their parade, but they're still worth a shot if you tend to listen to the same old tracks and are sick of garrotting yourself with cables.

Memory 128MB internal

Power supply 220mAh Li-Polymer battery

PC interface USB 1.1

Supported audio formats WMA, MP3

Size 140x150x60mm

Software MusicMatch, drivers

80% **PCF says…** "A likeable piece of kit, let down by stingy storage."

Belkin 6-Port USB hub for Mac Mini

Price £25 **Manufacturer** Belkin **Web** www.dabs.co.uk

We can't help but feel that followers of Apple's stylish designs sometimes suffer for their art. Take this Belkin hub, for example. A six port affair, offering you three extra USB ports and a single extra Firewire port, can be sold for a painful £25, simply because it's been made from white plastic and is the same size as a Mac Mini. It would fit the Evesham Mini-PC equally well, too, but we can't help but feel that £25 is a little steep for what's ultimately a basic USB and Firewire hub… many of which cost well under £10, and are smaller. Still, it looks nice, provided Essex white is your thing.

60% **PCF says…** "Much cheaper USB hubs are abundant."
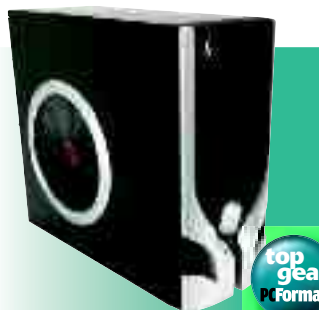
APlus Clio 2

Price £35 **Manufacturer** Aplus **Web** www.nanopoint.co.uk

Yes, there is an aeroplane related theme for this PC enclosure (even the box has a picture of a jet on it), and it did create some excitement when we realised just how enormous the cooling fan is. It's virtually silent, quite spacious, and features those wonderful clips that make loading and unloading drives a joy. The power button feels slightly flimsy, but overall this is a reasonable case, and the enormous, industrial side panel looks great when standing. But because the fan is transparent, the giant fins become almost invisible at speed. Some backlighting would have made this spectacular, rather than just a neat idea.

79% **PCF says…** "Great approach, but a bit of a bumpy landing"

Susurro CPU Cooler

Price £18 **Manufacturer** Cooler Master **Web** www.scan.co.uk

At £18, this little coppery whippet is very appealing, and if you're looking for an upgrade, it's a great choice. It's designed for Athlon chips, so Intel users need not apply. It covers all the bases though – Socket A, Socket 754 and Socket 939 chips are all welcome. And it's quieter than a field-mouse when farmer Jones' tomcat is on the prowl. Even with the side of the case off, we couldn't hear it. It keeps the CPU chilly, and doesn't make a nuisance of itself. Another good show from the masters of the art, and for the price, you can't complain. Well, you can. But if you do, we'll send Luis round to give you a firm talking-to.

90% **PCF says…** "Superb value, superb performance. Superb."

Athlon XP 3200+
PCF 152 86%

Can it be wrong to harbour strong feelings towards a particular processor? Quite probably. It's not going to win you the adoration of the opposite sex, that's for certain. But I must admit that I have an honest, earnest respect for this venerable little chip, and I want to tell you about it.

Before building a system comprising the XP 3200+, I had a Pentium 4 2.0GHz; not a bad processor in its day. But after a spot of disastrous overclocking, it was time for an upgrade. The 3200+ hit a real price sweetspot – at the time, a couple of years ago now, it was around £115. Partnered with a decent Socket A board that handled DDR400 memory and a Radeon 9800 Pro in the 8X AGP slot, I suddenly had the most powerful games machine I'd ever owned.

In fact, our Games Ed James still uses a 3200+ in his games rig; he's perfectly content with it, apart from that time the other day when Quake IV got it all hot under the collar and made it ring like a bell. There are still a few Socket A boards out there on the internet too, so if you fancy building a cheap secondary system, hunt around eBay or the e-tailers for an Athlon XP 3200+. You'll be surprised at just how good it still is.   Al Bickham

We want your reviews… of still-loved old kit: al.bickham@futurenet.co.uk

COASTER ROASTER
Easy Media Creator Essentials

top gear PCFormat

What? Pay for disc-burning software? Roxio has an uphill climb on its hands…

Price £50 **Publisher** Roxio   **Web** www.roxio.co.uk

Does anyone need to buy burning software in this day and age? It's still the case that most users who burn CDs or DVDs don't need to pay £50 for the privilege: free disc burning software is all over the web, while Windows Media Player 10 enables you to rip and burn audio CDs in about three mouse clicks. Roxio hopes we can still be convinced to buy authoring software, or it's up a coprolith creek without a paddle.

The company is trying to keep the market on the boil by loading its products with as many features as possible, especially where DVDs are concerned. *Easy Media Creator Essentials* combines the best bits from *Easy CD&DVD Creator*, *Sonic MyDVD* and *Sonic Record Now*. Cut down it may be, but the software still bristles with features, including the ability to burn to multiple drives simultaneously, create a disc image at the same time as burning a disc and all the usual authoring and backup tools you'd expect for £50. Roxio has pulled out all the stops when it comes to disc labelling too, and the package comes with some attractive templates for labels and DVD menus. The photo burning features rival a basic photo editing program too, enabling you to automatically

fix exposure, sharpness and colour saturation. These are fine for quick fixes, but no self respecting photographer would allow their disc burning program to do their photo editing for them.

ENOUGH, ALREADY!
Installation is straightforward, though a fast PC really helps, and the interface is very easy to figure out. The sheer range of power tools on offer may be overwhelming for beginners, but the logical Projects tab on the left of the screen is a big help. More experienced users will soon get to grips with *Easy Media Creator*, and it really comes into its own when dealing with digital video – editing and copying footage from PC to DVD is very easy indeed, and the ability to add tags and keywords is a big workflow aid. While some people wouldn't need all these features, heavy-duty disc burners and digital video fans will delight in the sheer number of tools on offer in this package.   **Geoff Harris**

Needs 500MHz CPU, 256MB RAM
Wants 1.4GHz CPU 500MB RAM

88% **PCF says…** "A potent cocktail of the best bits of three top Roxio programs."
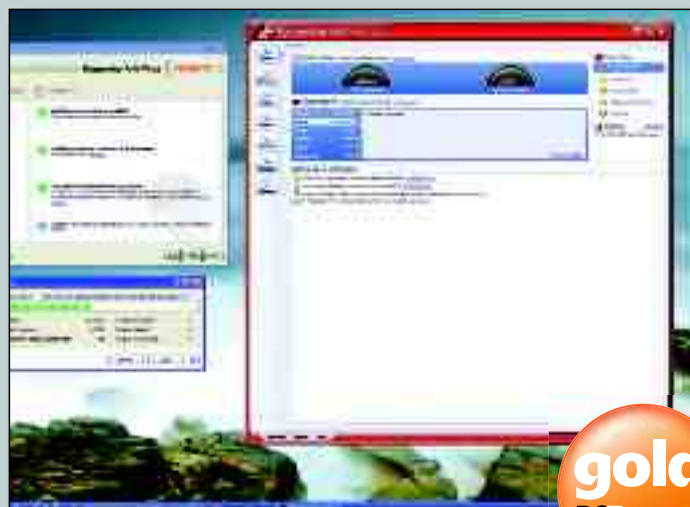
SPANNER TIME
System Mechanic 6 Professional

gold PCFormat

Fifty knicker, and all your problems will be sorted. Can't say fairer than that…

Price £50 **Publisher** iolo   **Web** www.iolo.com

You should know, it doesn't really matter how much you try to maintain your system while you're using it; any Windows installation is subject to the technical equivalent of a damage-over-time spell. Registry entries hang around from old installations, dragging boot times down; pointlessly replicated files build up in odd places and hard disk surfaces get as spotty as a leopard as file fragments are

"The optimiser noticeably improved our boot times"

littered about the place. This is *System Mechanic*'s raison d'être: it's designed to keep your system skipping along and trouble-free. Of course, it helps that the package has more tools than your average Swiss Army knife…

CHORE FUNCTIONALITY
In fact, it's not until you start exploring the deeper recesses of the package that you realise exactly what *System Mechanic 6* is capable of doing. It would take the rest of this review (and possibly a few columns more) to list all the

utilities, but as a brief overview, it's packed with maintenance and performance-optimisation tools and utilities to keep your PC secure – including Kaspersky anti-virus. There are repair options to restore damaged system files, and wizards to help you automate cleanup, acceleration and security tasks, so you don't have to bother with the fiddly details in future. It's an absolute kraken of a utility, bristling with functionality, and what's more, it works extremely well. The Startup Optimiser alone picked up a number of pointless files that our test PC didn't require, and noticeably improved boot-times. Moreover, the Kaspersky anti-virus and anti-hacker suites use up a piffling 9MB of RAM, so it's hardly the rampaging resource-hogger that, say, Norton is.

In short, it's £50 very well spent, containing, as it does, tools that really do help you to keep your computer spick-and-span in a way which Windows doesn't natively let you. For that reason it comes highly recommended.   **Al Bickham**

Needs 1GHz CPU, 128MB RAM
Wants 2GHz CPU, 512MB RAM

90% **PCF says…** "For those housekeeping tasks, there are few alternatives."

ROUND-UP

Tapes are tired, CDs too small. Paul Hudson hunts down the best online storage services

No matter how careful you are, we've all been in the situation where our computer has given up the ghost and decided it's no longer going to work. Usually this happens the day before some important work is due or just as you've fitted your new GeForce Mega Ultra 8900XT and want to see how it handles *3DMark*'s benchmarking gauntlet. More annoyingly, the CDs you were told would last forever have in fact been scratched to the point where they don't even work as frisbees any more.

WHOLE VAULT

This is the internet age, so what you need is online storage. Instant access to all your files anywhere that has an internet connection is as good as having a 100GB USB stick on your keychain. In fact, it's better than that, because even losing your keys can't thwart online storage, making it the easiest and most secure way to keep your data safe while making it accessible wherever you are in the world.

Keeping data under lock and key online is a very reliable backup method.

POWER AND CONTROL
Files Anywhere
Very nearly an online operating system

Price $8.95/month for 2GB storage space and backup   **Web** www.filesanywhere.com

gold
PCFormat

Backup is supposed to make you feel safe, and we must admit that the slick user interface behind FilesAnywhere gives you instant confidence. At first the interface looks busy, but once you start using it almost as a desktop

Files Anywhere offers unprecedented control over backup and storage online. Not only that, but the transfer speeds are very fast.

operating system you start to realise the importance of having these options close to hand. To help get you started, popup help appears when you hover over any interface option.

STORE AMOUR
Renaming files with one click, printing direct from your browser, viewing slideshows of your pictures and even ordering photo prints online can all be done through the interface. Most services allow you to create folders to organise your files, but FilesAnywhere enhances that by offering a "file basket" that lets you select files from anywhere on your drive, then download them all at once. The app also has a flexible email service that allows you to send links and files, or even to set up a drop box so that others can upload files.

Uploading files is quick and easy, with a progress bar so you know how far along your upload is. Downloading is equally fast, but we appreciate the
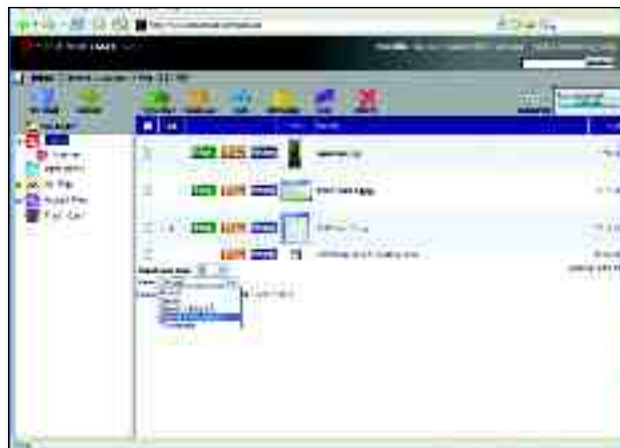

SOMETHING FOR EVERYONE
Streamload
From free to $50,000 a year, Streamload has the solution…

Price $10/month for 25GB bandwidth and unlimited space   **Web** www.streamload.com

Where FilesAnywhere excels at providing functionality for power users, Streamload follows the "Keep it Simple, Stupid" approach and so caters for everything a home user might need. Streamload

Whether you're a lowly home user or a massive business with hundreds of terabytes of data, Streamload should satisfy.

doesn't charge you anything for uploading files, so you can bung up as much as you want. Neither are you charged for taking up space, so you can easily back up every important file on your computer without worrying about capacity. The limit is on your download bandwidth, and here you can choose between a lowly 100MB/month for no fee at all (yes, it's completely free), through to more useful accounts such as $9.95/month for 10GB/month, even up to 15TB/month (15,000 Gigabytes) for $4399 a month. If that one's for you, we fear your My Documents folder.

CONVERSION ABLE
At an average of 100KB/sec, Streamload is no speed demon, but it sits comfortably in the middle of the pack. As a nice twist on the usual web interface, Streamload provides downloadable Windows programs that simplify uploading and downloading to your storage account. Even friends

addition of a "Zip and download" link to compress files and reduce bandwidth. Once files are uploaded, you can add custom meta-information to them to aid searching, such as a "Location" field for the name of the place in a photo.

Advanced users will find much here to appeal to their needs. You can get FTP access to your files, WebDAV access (this turns your web browser into a drag-and-drop file browser), or even direct drive mapping, so you can have drive E:\ as your web storage. You can also enable file versioning, which allows check in and check out of stored files. Add to all this that FilesAnywhere is the fastest here (average of 190KB/s), and it's no surprise it comes out on top.

Min Storage	100MB
Max Storage	100GB

95% **PCF says…** "Extremely fast and as function-heavy as they come; well worth the money."

top gear
PCFormat

without a Streamload account can upload files for you.

Easily the best thing about Streamload is its ability to read and manipulate media files. Most services here do file previews, such as showing you a thumbnail of a JPEG. Streamload takes that further by allowing you to re-encode media. For example, right-click on a picture and select Convert, and you can change it from a JPEG to a GIF file, or right-click on an MP3 file and you can convert it to a WAV file or to a lower-quality MP3. No matter what type of file you're working with, you can also add meta-information for custom searching, even marking content as "adult only" if that floats your boat.

Min Storage	10GB
Max Storage	Unlimited

88% **PCF says…** "User-friendly and fairly priced, but only average in the speed stakes."

Diino
Price $9.95 for 10GB space **Web** www.diino.com

Unlike every other service on test, Diino is mainly operated through a desktop interface. On the plus side, this means you can just drag and drop files and you can carry the software around with you on a credit card-sized CD. Running the CD starts the program, where you can log in and retrieve your files anywhere. The fact that the stunted CD sounds like a power drill when spinning is only *slightly* embarrassing in public places, and it's irritating that's there's no Linux or Mac OS X support. Despite having a full client, Diino's features disappoint. Pictures have thumbnails, but lack features like slideshows. Emails allow you to type in addresses, but are sent, confusingly, from youraccountname@netpodmail.com.

The few advanced features are nothing special: you can share folders and stream MP3s, but even that is crippled so you have to use the built-in player. At 140KB/s average transfer, Diino is fast enough, but we can't see why you'd bother when the other options are so much better.

Min Storage	20MB
Max Storage	100GB

45% **PCF says…** "Reasonably fast, but thin on features and requires special software."

NetMass
Price $10/month for 250MB space
Web www.netmass.com

NetMass primarily targets large companies, which is why you'll find higher prices here than elsewhere. The corporate theme even affects the styling of the interface – there are more shades of grey here than in an FBI suit shop.

One feature unique to NetMass is the ability to search through your storage then save that search for later. It's not quite WinFS or OS X's Spotlight, but it is a timesaver. Similar to saveable searches is the ability to create bookmarks in your storage area to ease navigation, but this only helps if you have a complex directory hierarchy.

Part of the cost of NetMass is that you're provided with a backup tool that can sync your files nightly or on request. You can also mount your online storage as a local drive, allowing for drag and drop. At just under 70KB/sec, NetMass is among the slower of storage providers here, but it's reliable and satisfies the "it's expensive, so it must be good" mentality of many business people.

Min Storage	250MB
Max Storage	50GB

54% **PCF says…** "Pricey and not at all quick, but good for small businesses and the like."

Xdrive
Price $9.95 for 10GB storage **Web** www.xdrive.com

The main differentiator between online storage services is the quality of their interface, and this is also one area where Xdrive scores – at least at first. Windows XP colours and icon styles are omnipresent, and folder names like My Documents and My Music put you at ease. But then you find that the interface keeps trying to open pop-up windows, which most browsers block nowadays, or you suffer a four-second delay changing views as you watch a loading animation. These are frustrations we should have waved goodbye to back in the 90s.

The design philosophy behind Xdrive appears to be "simplicity first, functionality later". You can do slideshows, but expect them to work only occasionally. Similarly, the folder sharing system isn't as powerful as its rivals, but the interface is easy enough for anyone to grasp.

Sadly, whatever plus points Xdrive gains, it loses by coming last in our speed test; 50KB per second is just not enough when bandwidth is at the core of the product.

Min Storage	5GB
Max Storage	Unlimited

72% **PCF says…** "Attractive interface, but shallow in every other way that counts."

FlipDrive
Price $9.95 for 5GB storage **Web** www.flipdrive.com

In a any market, it's crucial to stand out from the crowd, and for FlipDrive that comes through offering more than just storage. Inside the slick web interface you'll find an address book, a calendar system, plus a bookmark manager. Most important of all – at least to FlipDrive's business model – you can order prints of pictures directly.

Uploading files can be done straight through your default browser, but we had a better experience using the special Java plugin that makes uploading a cinch. Our tests showed an average speed of 176KB/sec, which puts this near the front of the pack.

Unlike some of the other services on offer here, there's no fancy conversion tools, or slideshows, or built-in MP3 players. But there is a well-tuned photo album system that lets you organise your pictures. When you create a new album with the default settings, it appears online at www.flipdrive.com/yourusername, where people browsing the album can buy prints of your pictures for themselves.

Min Storage	5GB
Max Storage	30GB

66% **PCF says…** "Very nice for the photo heavy users, but outdone in all other areas."

"This is a stunning looking game that has clearly had a lot of attention lavished on it"

THE LORD OF THE RINGS

II

THE BATTLE FOR MIDDLE-EARTH

Tolkien goes strategic, in a second chance to give Samwise
Gamgee what he's got coming to him

**high
score**
PCFormat

Funny how you can miss the big picture sometimes. Look back at all the *Lord of the Rings* movies and you'd have thought they were about heroism, and honour, and races uniting against a common evil. EA either has some different priorities or got a particularly X-rated screener: it reckons it's all about death. Epic, sprawling, and eternal death.

This is a game which makes a nonsense of the term "dead weight": anything that isn't dying, or just about to die, isn't doing well enough for itself, and it's the ones who are still alive that are holding you back. Admittedly, RTS is not usually a genre where you're encouraged to develop deep emotional relationships with each participant in your tank rush, but few have rubbed it in as much as this. It feels like you're responding to rising floodwaters by frantically breeding

rabbits, rather than just using proper sandbags like everybody else.

LOOK WHO'S TOLKIEN
Of course, the original books didn't shy away from shedding a bit of brightly coloured blood, and it's from there that the storyline comes from. Rather than rehashing the film narrative covered by the first game, this picks a series of battles from elsewhere in the saga, covering the Elves and the Dwarves' attempts to hold back the forces of Mordor while Elijah Wood is being irritatingly pious on the other side of the continent. A pre-Sauron unfriendly, if you like. You only get occasional cutscene flashes between each mission to tie it all together and remind you which bit of the film you're underscoring, but it's enough to hold the narrative together as you gradually chip away at the encroaching hordes (Good Campaign) or crush the hated do-gooders (Evil Campaign). Which

is where the violence and mass death comes in.

To its credit, *BFME2* doesn't hold you back from battle. Resource gathering is totally absent; cash is generated by harvesting structures that draw it from the surrounding ground, so there's an immediate drive to grab more territory ↘

Beware the briny
Why not try a watery grave?

A series of naval battles liven the game up, but are ruined by the units' fragility and poor AI. The enemy can build identical ships as fast as you can, so battles are futile until you can grab the upper hand. The unit cap irritates, as you can lose three commanders when one of the papier-maché transports goes down.

◩ without making you prat around with an agricultural system. That frees you up to establish your fortress, which you can do more or less as you fancy; structures and walls can be thrown up anywhere.

When it comes to units, however, things come to a halt. Production caps swing into action almost immediately, confining you to a very tight roster of the handful of basic unit types. This should be a plus point – forcing you to be careful about which units you build, which bonuses you spend your victory points on, and how you use them – but in practice, everybody can be expected to die no matter what you do.

A big part of this is basic strength; only the hero units and expensive heavy characters can be relied upon to last longer than around five minutes, while most of the infantry endure for perhaps 180 seconds of pitched battle before being turned into fine mince. Controls for plotting routes and setting stances make very little difference because you've rarely got the time or the resources to do anything other than

Dwarves vs. elephants: not one of the classic defensive decisions.

Rise, fighting Uruk-Hai. Now prepare to be senselessly butchered.

stem the onslaught, so tactics are usually reduced to throwing bonuses into the mêlée and hoping that there's someone still in one piece at the end of it. Things aren't helped by the clunky AI that means that your troops will queue up for death rather than moving round each other to get to the frontline.

The most dispiriting element of all is that even if you're the finest Elven commander outside of terrifying LiveJournal fan fiction then the survivors are still doomed: you actually need the punier creations to die off in order to free up the space for bigger, badder, or at least less horribly crippled units. This leads you to the faintly ridiculous situation of having to send unarmed transport ships and heroic survivors who really should be pensioned off into the bloodstained maw of a leering enemy, just to free up some beds.

DYING WITH INDIGNATION
You can take some solace from the fact that their last moments are, at least, going to be enormously photogenic. No going gently into that good night for the Middle Earthers: they're going to breath their last plummeting to the ground from the claws of a giant eagle, flying through the air with their guts left behind smeared on the axe of a troll, or sucked beneath the waves in a vast whirlpool that takes down all the surrounding ships. This is a stunning-looking game that's had a lot of attention lavished on it, and every turn brings a new and impressive sight; spiders scaling walls, Ents and trolls flinging damn great rocks at each other and even a Dwarf warrior idly tossing his axe in the air and catching it during a rare quiet moment.

The sound is excellent too, although the voices mean it's a bit harder to take things seriously. Once off the big screen, the ridiculousness of the characters becomes more obvious – Elves sound just like

Hanging on for a hero
Off-the-peg heroism not cutting it? Craft a bespoke character

1 A nice, although sadly underdeveloped feature, is the ability to create your own hero, using an MMO-esque character creation tool. You get the full choice of races, although the customisation is confined to a limited collection of silly hats (Elves) or tetanus-inducing armour (Uruk-Hai).

2 The important stuff comes with the allocation of powers. Again, the toolbox is a bit on the sparse side, but you can create a custom set of madskillz characters that differ from the supplied celebrities like Legolas – and thus give your army a vital tactical edge during multiplayer combat.
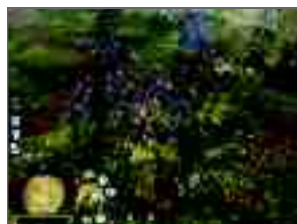
3 Once you've finished tinkering, you can choose to use your hero when setting up custom game modes such as War of the Ring. Your made-to-measure horde will appear as a construction option within your fortress; all you've got to do is cough up the cash and send them into battle.

UP CLOSE BATTLE IS JOINED

Nellie the murderphant
One of the more impressive heavy units in the game, Tolkien's psychotic pachyderm does a great line in flinging attackers out of the way and goring large buildings.

Green party
Elves, being *Guardian*-reading softies, get wholesome environmentally conscious bonuses. Elven Forest pops up some greenery that gives you an armour bonus and knocks the shine of attackers; the Mordor equivalent is just a blasted crater.

Axe me another
Ranged troops are very useful for picking off aerial units. Goblins, Elves and Men all get bows; Dwarves get tasteful throwing axes

Planning permission
If you're feeling confident, take some builders on the battlefield and throw up some of your own structures. It's a quicker way to get troops into place once you're holding a territory.

Tunnel of love
Goblins and Dwarves have the power of tunnelling – sink a shaft by the barracks and another on the battlefield, and they'll be getting slaughtered by the thousand before the paint on their armour's dry. Hurrah!

> "Vast numbers of brave fighters are often turned to bonemeal in battle"

weak-chinned public schoolboys doing a really bad school play, while goblins have the ringing cackle of a pantomime villain – but the music is spine-straightening stuff straight from the orchestral score, and every set-to is marked with authentic clangs, splats and screams.

RING CYCLE

The sense of heroism is further enhanced by the new War of The Ring mode – a turn-based map of Middle Earth. This can be played either as straight and frankly rather unsatisfying table-top strategy, shuffling tokens around and making every build cycle count, or you can opt to go in and fight the battles yourself. The latter is by far the more fun, and the best use of the extremely lean resource model; it's possible to go into a horribly one-sided battle that the auto-resolve would cheerfully convert into total defeat, hang onto your base by the skin of your teeth, then rise to crush the enemy and have a much bigger force on the board when you go back to the map view. It's epic and addictive – boosting the longevity well beyond the singleplayer campaigns, both of which are surprisingly short – and should make the multiplayer a great

thing indeed, particularly when coupled with the limited but nevertheless valuable character design feature. See 'Hanging on for a hero'.

However, this doesn't change the fact that every battle has countless moments in which you find yourself frantically stacking up build orders while vast numbers of brave fighters are turned into bonemeal on the other side of the map. It gives an authentic sense of having beaten overwhelming odds and works very well for assaults,

Kill 'em all
Your shortcut to battlefield victory

Slay enough enemies and you earn Power Points, which can be spent on extras you can deploy in battle – defence modifiers, instant heavy units, aerial attacks and the like. Long cooldowns mean they've got to be used carefully, but they can make the difference between winning the battle and fruitless, frantic clicking.

but the unit cap almost always feels like an arbitrary obstacle rather than an organic limit, and base assaults can be interminable. No matter how clever you are, every battle ends with a significant percentage of your forces soaking into the scenery, and all too often the euphoria of victory is replaced with the realisation that the death can stop now.

It's also a touch over-familiar: the graphics, the interface, and those unit caps are all survivors from the original *BFME*. The War of The Ring mode more than justifies the new instalment, but it takes the edge off the spectacle and allows repetition to drag this down a bit more than it should. It's an entertaining and clearly high-class game, but is much keener on senseless slaughter than sophistication. **Jon Hicks**

Needs 2.4GHz CPU, 512MB RAM, 128MB 3D card

Wants 3GHz CPU, 1GB RAM, 128MB 3D card

Net gaming Tournament, Open Play, War of the Ring, 1v1 and 2v2.

Discuss www.pcformat.co.uk/mag/bfme2

83% **PCF says...** A visceral, engrossing epic noticeably lacking in refinement."

Forget to take a Thief into the dungeon, and you'll be in big trouble.

Flapping your arms like a ninny is no substitute for a Featherfall spell.

DICE WITH DEATH

Dungeons & Dragons Online
Stormreach

The hoary role-players' favourite has been expanded, and there's nary a D20 in sight

Price £35 **Publisher** Atari **Developer** Turbine **Web** www.ddo.com

When we're talking about online RPGs, there's an installed user base elephant in the room and you can't go too far without discussing it. *World of Warcraft* is the current benchmark, and don't other developers know it: looking at the forthcoming fantasy games there's a sense that they mostly realise that they're not going to be able to compete with *WoW* on its own terms, so they're scurrying around to find places where they *can*. While its 6 million player success has moved the goalposts, it

doesn't mean that the more traditional MMO audiences – 100,000 plus – aren't profitable. Make a game that can secure a fanbase and you're away. But finding that fanbase – there's the trick.

Turbine's solution for *Dungeons & Dragons Online* is to put *Dungeons & Dragons*… online. It's hardly rocket science. *D&D* is one of those influences that has permeated gaming so completely that we don't really think about it. Study *WoW* or *Everquest*, and mechanics apart, you'll see that there's very little that has changed since the original pen-and-paper *Dungeons &*

"This is more reliant on team play than any other MMO we've come across"

Dragons. *D&D* was about a group of mates going off into a dungeon, fighting a dragon and wishing that someone they fancied would touch them. Fantasy MMOs bring these concepts to life.

That said, *D&D* didn't make you spend hours traipsing around making

sandals, or let another group of players turn up during your quest. So in D&DO there's only a vestigial living world, where players meet up and form groups. When they head out on a mission, it's just the dungeon, the monsters and their chums; everything's instanced. The closest comparison is *Guild Wars*, except without the PvP angle, greater concentration on indoor dungeons and a monthly fee. Erk.

Don't dismiss it immediately though. The indoor dungeons, for example, are a revelation; far more like a traditional videogame level than any other MMO dungeons. That is, there's doors, containers, things to climb, secret passageways to find and even fully mechanical traps. This ties in with the more action-based style of the game. While the vast majority of turn based *Dungeons & Dragons'* rules are implemented, there's more real-time

Button mashing
Now try it with your eyes closed

A good example of how the instances create content other sorts of MMOs don't even touch is the puzzles. They don't take over the game, but offer an interesting change of pace. Take this example. Rotate the tiles until everything's lit up like a Christmas tree and the mission's complete.

Get out of the starter zones and things get increasingly prettier.

Wet and grimy dungeons demand serious central heating.

interaction than most MMOs. For example, shield blocks, dodges and tactical repositioning can be fired with a click rather than queued. At its best, when the narrator adds a perfectly timed dramatic exposition when an army of humanoids sweep down on your flimsy yet heroic band, it's a pacy action-drama – this is hack'n'slash *D&D* rather than high-brow politicking – but the atmosphere adds greatly.

It doesn't always work, though. While nowhere near as repetitive as the door missions in *City of Heroes* in terms of the variety of tasks, there's often a sense of "haven't we been here before?" Early on, there are times when it appears the designers didn't realise that when people say "In RPGs you spend all your time fighting kobolds" it was a joke. Most importantly, the game is often a little clunky around the edges, with little weight to your characters or

actions. Equally, the level design of the dungeons can be distinctly uneven, especially favouring certain character class combinations.

CHARACTER BUILDING

And the different character classes are the second Really Important Thing to realise about *D&D Online*. We've got used to the idea of self-contained character classes in MMOs, being able to solo quite happily through dungeons. Except in *Dungeons & Dragons* it was never like that – characters were designed to *require* support, and that continues here. Go into a dungeon without a Thief, and expect to stumble foolishly into swinging blade-traps and miss secret doors. Go in without a Cleric and expect to spend a lot of time nursing your health. While the game encourages free thinking – it gives out XP merely for completing missions, not

Magic Eye posters are so passé.

how you completed it – a Thief who dodges all the opponents will get similar XP to a Barbarian who kills them all. *D&DO* is more reliant on team play than any MMO, and as such works best when you're playing with friends – much like pen-and-paper *D&D*. With integrated voice-comms, Turbine is clearly trying to encourage camaraderie.

Which leaves us with an atypical MMO. It offers a unique experience – but one which you'll want to involve friends with. At least with this *D&D* you won't have to argue who's going to be the Dungeon Master: there's some 1s and 0s dying to do it for you. **Kieron Gillen**

Class dismissed
Let's hear it for all the, er, clerics out there…

1 Wizards need to pre-prepare spells and carry around a load of bat guano to use their best powers. The Sorcerers have less variety, but their improvisational antics make them popular.

2 The Barbarian is able to do a wet-cut starting at £8, or £10 with a hair wash. Something for the weekend, sir? Good for you. Also, they go ape-crazy beserk at the slightest provocation.

3 With a mixture of fighting, spell-casting and healing, Bards are the jack of all trades and the master of twanging some abhorrent medieval stringed instrument. Suggest a sing-along at your peril.

Needs 1.6GHz CPU, 512MB RAM, 128MB 3D card, net connection

Wants 2.4GHz CPU, 1GB RAM, 256MB 3D card, broadband

Net gaming Online only

Discuss pcformat.co.uk/mag/ddo

80% **PCF says…** "An atmospheric online version of *D&D*. Best with friends – but what isn't?"

When the bomb timer runs out, your car explodes into a ball of flames.

Even *Crashday* doesn't escape the trend for huge spoilers and horrendous paint jobs.

"Badges? We don't need no badges. I don't have to show you any stinkin' badges!"

DANGEROUS DRIVING

Crashday

Rocket launchers, mini guns and nitrous injections? This must be the world's most comprehensive road rage therapy

Price £30 | **Publisher** Atari | **Developer** Moon Byte | **Web** www.atari.com/crashday

Germany has a slightly different attitude to road safety to Britain. Famously, there are sections of the autobahn entirely without speed limits – poles apart from, say, the M25, which generally maxes out at 4mph during 'rush' hour. The country is also home to arguably the most dangerous racing circuit in the world, the Nürburgring. And should you wish to hare around it yourself, you don't need a racing licence, just a measly €16.

If the teutonic team at Moon Byte Studios had been subjected to an unmasked Darth Vader extolling the virtues of the Green Cross Code, *Crashday* might never have existed. But this is a game that boots etiquette out of the window and hopes that it hits one of your competitors on the way out.

Rather than sticking to the traditional racing format, *Crashday* plays like a collection of driving-related mini games. There is an offline career mode, strung together with one of the more quirky voiceovers we've heard, but this does little more than offer a taster of the various gametypes on offer.

Crashday really gets going in multiplayer mode. With a handful

of sentient beings at the controls, and a rocket launcher strapped to your dangerously close approximation of a Ferrari Enzo, *Crashday* suddenly becomes a kind of automotive ballet, the likes of which we haven't seen since *Interstate '76*.

CHECKERED PROGRESS

While functional in singleplayer, the majority of game types come to life when played over a network. But even the multiplayer can't save the races. Every track is a point-to-point race

Road works
Your way or the highway

Crashday includes a simple yet flexible track editor built directly into the game. Finished maps can be used in all game modes, and the single player AI will even do its best to work out what you were thinking when you placed that supermarket in the middle of your race track.

through a series of checkpoints. Infuriatingly, missing one of these means turning around and, generally, losing the race because of it. So, when some of the courses have up to 24 checkpoints, it quickly becomes maddeningw. The much-trumpeted stunt mode is even more irritating, providing a monotonous routine of hitting ramps until the game decides someone has won.

Crashday definitely works best in an open arena, and with a network full of like-minded maniacs. Deathmatch, Capture the Flag and Pass the Bomb are all tremendous fun and the impressive track editor should add longevity. But it's because of this promise that it comes as such a disappointment when the race and stunt modes miss the mark by quite some distance.   **Mike Channell**

Needs 1.5GHz CPU, 512MB RAM, 64MB 3D card

Wants 2.5GHz CPU, 1GB RAM, 256MB 3D card

Net gaming LAN/internet

Discuss pcformat.co.uk/mag/crashday

75% **PCF says...** "Serious fun for broadband players, but others should look elsewhere."

It may not be staunchly accurate, but *Elite Action* certainly packs a punch.

MANY TANKS

Panzer Elite Action
Fields Of Glory

World War 2 carnage, from the side with all the best toys

Price £30 **Publisher** JoWood **Web** www.panzereliteaction.com

Call us scrotey old war-buffs – you wouldn't be the first – but you've gotta love the technology fielded by the Germans in World War II. Our humble Crusader and Valentine tanks were but paper tigers compared to the fearsome power and armour of, say,

"Each mission takes you deeper into enemy territory"

the Panzer IV. And now, you get to play with these clanking doom-bricks in an all-action, no-brains shellgasm. Yay!

ENDLESS WAR
Panzer Elite Action requires virtually no mental input from you. It's a WSAD-and-mouse blaster, set across expansive tracts of Europe, and it's a pleasing diversion. Each mission takes you deeper into enemy territory, at the pointy end of the German spearhead, and it's an almost constant barrage. Heinz Guderian (Google it, you'll learn something…) himself would've turned green at the speed with which you charge through France – by the fourth mission, you'll feel like you've blasted more French tanks than they actually had. And that's kind of the problem, too. While it's pretty fun in

The action is fast and frantic with some satisfyingly massive explosions.

small doses, the ceaseless shelling swiftly becomes a fairly monotonous experience. Fortunately, the multiplayer is a pretty good crack, involving capturable spawn-points a la *Battlefield*; in fact, it's very like *BF*, but without the aircraft and infantry. It's by no means as dedicated and long-lived a game, but good fun in its own right. In short, it's a decent, console-style action title and little more; quite pretty (with some lovely texture-work), quite frenetic, but easily tired of, if like us, you require a little variety in your games.   **Al Bickham**

Needs 1.4GHz CPU, 256MB RAM, 64MB 3D card

Wants 3.0GHz CPU, 1GB RAM, DX9 3D Card

Net Gaming LAN/internet

70% **PCF says…** "A pleasing cannonade, but you'll tire of the ceaseless verisimilitude."

SK8TING

Tony Hawk's
American Wasteland

Is happiness a badly textured half-pipe?

Price £20 **Publisher** Activision **Developer** Neversoft **Web** www.th-american-wasteland.com

There are some games that really only work in the button-mashing world of the console, which is perhaps the reason why the latest PC *Tony Hawk* effort has arrived four months after the other platforms. Promising full

Freedom of movement? Not down there or you'll be teleported back.

freedom of movement around a wheel-friendly version of Los Angeles, you start out as a young skater trying to find your place in the bright lights of the city and, presumably, somewhere to live. Despite the *Grand Theft Auto* dress up, the equivalent of getting a new frock for your Barbie, this is Tony as we know him well.

FREEDOM AT A PRICE
Like the previous game in the series, *Underground 2*, you can bimble around the maps unhampered by time limits. Neversoft has also thrown in BMX riding, which provides a slightly different feel, but is essentially the same as skating.
The feature that Activision is really pushing, though, is the ability to move between areas of the city with no loading times. Once you've unlocked a new area you can then skate through a long, enclosed corridor, grinding the odd rail here and there, before emerging into a

Last time we went to Los Angeles the dinosaurs were kept firmly under control.

new bit of map. You can feel the game chugging as it processes the next level, even on our top-spec machine.
The game is unjustifiably ugly, with the PC's superior resolutions highlighting every flaw in the engine. Even the cut-scenes, which you'd expect to be polished, are shot through with hideous artefacts. Still, skateboarding's about style in any way, is it?   **Dave James**

Needs 1.2GHz CPU, 256MB RAM, 64MB 3D card

Wants 2GHz CPU, 512MB RAM, 128MB 3D card

Net gaming Up to 8 players

62% **PCF says…** "Essentially just *THUG 2* with corridors, and Elephant Man-ugly, too."

The arrogant, rude antihero himself.

Marc Ecko's Getting Up
Contents Under Pressure

Banned in Oz – but was it really worth the attention?

Price £30 **Publisher** Atari **Web** www.gettingup.com

As we write this, *MEGU:CUP* (surely the worst acronym ever) has been banned in Australia. Atari has pointed out the irony that the game "takes place in a world where freedom of expression is suppressed by a tyrannical government." Having just

**BUY THIS
IF YOU LIKE…**

>> **GTA: San Andreas**
   Rockstar Games
>> **Tomb Raider: Angel of
   Darkness**
   Eidos
>> **The Punisher**
   THQ

"Kiddie painting-by-numbers books are more interesting"

Our noble hero beats up some cleaners.

been forced to play the game for two days, *PCF* says bring on totalitarianism.

BAN THIS SICK FILTH!
Fashion designer Marc Ecko has written a script to represent the 1980s graffiti scene, with 'toy' (or 'noob') artists performing death-defying graffiti. Ecko's even roped in artists such as P Diddy to supply voices and music, and replaced the zany glee of the console graffiti leader *Jet Set Radio: Future* with the attitude of *San Andreas*. Your character is so arrogant that when the city mayor declares war on graffiti, your sympathy is with him. You'll need a decent gamepad to pull off the graffiti, as keyboard controls aren't well implemented. However, it's also tremendously dull. Kiddie paint-by-

numbers books are more interesting. In theory, the Intuition button provides a visual representation of where you can spray, post or sticker, though often it doesn't appear. Glitches like this undermine the otherwise passable visual style. The combat is dumb, too. There's a sneaking system as well, though it was so unreliable we stuck to thuggery. We know *PCF* readers aren't into graffiti. We also know that most PC gamers aren't either. So releasing a game as moronic, offensive and boring as this for the PC is bizarre.   **Dan Griliopoulos**

Needs 1.8GHz CPU, 512MB RAM, 64MB video card

Wants 2.4GHz CPU, 512MB RAM, 128MB video card

Net gaming None

51% **PCF says…** "Deserves to be banned over here as well. This is wack, even for toys."

Ford Street Racing

Price £20 **Publisher** Xplosiv **Web** www.fordstreetracing.com

Think of 70s cop shows, and you think of Ford cars. The Gran Torino in *Starsky and Hutch* and the Capri in *The Professionals* were more than mere transport, they were part of the cast. *Ford Street Racing* gives you the opportunity to race both of 'em around the sun-bleached streets of Los Angeles, and you can almost hear Huggie Bear's jive.

The singleplayer challenge is backed up by two Team Racing modes. You can initially switch

between the two or three cars and use blocking or slipstream tactics to gain an edge, a pleasingly hardcore sim feature for what is fundamentally a low-budget racer.

Needs 1 GHz CPU, 128MB RAM, 32MB DX9 card

Wants 2.4GHz CPU, 256MB RAM, 128MB DX9 card

Net gaming None

67% **PCF says…** "Interesting ideas, but far too shallow."

The Sims 2:
Open For Business
Price £20 **Publisher** EA
Web thesims2.ea.com

It's all about the money, so chuck twenty sheets at this new *Sims 2* expansion and let's play at being Donald Trump. *OFB* allows you to buy shops with your Sims' hard-earned cash, selling a wide range of goods and hiring and firing your staff. Cue the series trademark of hectic backside wiping and fun interactions.

Speaking of one-on-ones – a new chemistry element shows when two Sims are lusty for one another. Great when you've got a randy teen aspiring to a first kiss, less so when a family man is dazzled by hot twins…

Needs 1GHz CPU, 256MB RAM, 64MB video card

Wants 2GHz CPU, 512MB RAM, 128MB video card

Net gaming None

74% **PCF says…** "Playing shop is fun and there's enough here for Sim-ophiles"

Flatspace II
Price £14 **Publisher** Cornutopia
Web www.lostinflatspace.com

Flatspace II, like its prequel, doesn't bother with a 3D universe, instead utilising a top-down viewpoint for its assault on *Elite*'s crown. Initially this can feel restrictive, but there's an internal logic. Rather than a restriction, it becomes a tool in game design, forcing you to invest in upgrades to cope with the universe.

You have a choice of careers and the combat works well, but early missile trade is vital to avoid being swiftly expunged from the game by pirates – constant saving is required. Otherwise it's simple and fun, with a huge universe and lots of toys to play with.

Needs 400MHz CPU, 128MB RAM, 32MB video card

Wants 1GHz CPU, 256MB RAM, 64MB video card

Net gaming None

71% **PCF says…** "Repetitive graphics, but an agreeable slice of nostalgia."

Three guesses what's wrong with this picture.

Darth Vader, hitting a shed with his glowstick, yesterday.

STRATEGIC FORCE

Star Wars
Empire At War

Nobody mention *Force Commander,* please nobody mention *Force Commander...* Or *Galactic Battlegrounds.* Or *Galaxies.* Or *Battle for Naboo.* Or...

Price £35 **Publisher** Activision **Developer** Petroglyph **Web** www.empireatwar.com

There are two ways this could have been done. One: Stick to a small array of iconic *Star Wars* troops and vehicles, then create huge-scale, deeply strategic conflicts that put *Rome* to shame. Two: Bolster the ranks with unconvincing new creations (TIE Fighters on tank treads, boxy tank after boxy tank after boxy tank...) so the lack of scale and depth is neatly disguised by being able to yell "includes 80 million unit types!" on the box. Guessing which path *Empire At War* took does not mean the Force is strong with you.

It's a curious beast, hitting an eerily exact halfway point between the two

ON THE DVD
>> Playable demo
>> Screenshot gallery

BUY THIS IF YOU LIKE...
>> **Warhammer 40K: Dawn of War**
   THQ
>> **Command & Conquer Generals**
   EA
>> **Any old crap with 'Star Wars' written on the box**

botched attempts at a *Star Wars* RTS that preceded it. It's neither the clumsy, spartan mess that was *Force Commander*, nor the shamelessly skinned *Age of Empires* bore that was *Galactic Battlegrounds*, but it does borrow a refreshing lack of resource management from the former and the traditional interface of the latter.

With ideas taken liberally from *Dawn of War* (capture points!), *Rome: Total War* (strategic map!) and *Ground Control* (reinforcements!), the result is a familiar but short-sighted RTS rendered largely enjoyable thanks to a reasonable sense of classic *Star War*siness. Unfortunately, though, the phrase 'that's no moon' is not employed at any point.

AIM FOR THE LEGS
But crivens, *EAW* makes some odd choices. A crippling unit cap means there's no hope for the truly epic land clashes that fans crave, while the developers' apparent discovery that there aren't, in fact, a great many classic *Star Wars* ground units has led to a cavalier approach to unit design. They stick out like a Rancor on the Death Star, and almost give the game the feel of a fan-made mod. The pleasing option to release C-3PO and R2D2 into a

pitched battle and watch the tin irritants instantly perish aside, the Rebel ground force line-up in particular is a patchy, bland affair, making the lure of the Dark Side particularly strong thanks to the more nostalgia-evoking Imperial tech tree, with its AT-ATs and Scout Walkers. Visually, this isn't quite the internal consistency of the older *Star Wars*, but rather more akin to that made-it-up-as-we-went-along feel of the prequels.

What, then, of space? Thanks to the likes of *Homeworld*'s sterling efforts, it's no longer the final frontier of compelling strategy games, but those advances have been all but ignored by *Empire At War*'s hotly anticipated space battles.

Stalledtroopers
Troops slow? Try new speed-fighting!

While space battles rip along like nobody's business, fighting on land is a gratingly slow affair. This is mainly due to most of the land units moving incredibly slowly. Stormtroopers aren't storming. Thank The Maker, then, that there's a double-speed button to make the tedium pass quicker.

Red vs. blue – the biannual Hoth Morris Dancing tournament turns ugly.

Despite appearances, space missions are very similar to the land ones.

Unfortunately, you won't see many more AT-STs than this at any one time.

He said aim for the legs, not the neck, idiot.

Though they look the part – all frenzied swarms of red and green laser beams and epic explosions – they feel kind of silly. Space, it transpires, is flat. Really flat. You just won't believe how vastly, hugely flat it is. Essentially, it's the land maps with terrain textures replaced by starry, starry nights and impassable hills substituted with asteroids.

Vehicles can't move through space, only across it, as if it was some sort of viscous, tar-black ocean. Sure, it's an

"There's no hope for the truly epic land clashes that fans crave"

awful lot easier to control than *Homeworld,* as space battles are controlled in exactly the same traditional *C&C* way as land conflicts, but it feels like we've been sold short. At least the ships themselves feel more true to *Star Wars*, thanks to a better-stocked larder of existing interstellar treats.

Salvation comes in two forms. First is the incredi-switch, as it really should have been named. Press the incredi-switch, and obtrusive interfaces, health bars, mini-maps et al drop away and the camera swoops to a worm's-eye or AT-AT's-eye perspective on the carnage. It's truly spectacular, especially in the space battles – making visual mincemeat of its otherwise superior sci-fi RTS rival, *Dawn of War*. You can't play the game while it's in Cinematic Camera mode, but when it looks this good, who cares?

DEFENDED ON ALL SIDES

Empire At War also strikes back (cough) with its strategic map in singleplayer or the Campaign multiplayer mode. It's

lifted directly from the *Total War* games, but it's exactly what a *Star Wars* RTS needs: a sense of conquering the galaxy planet-by-planet, system-by-system, rather than merely a series of weirdly disassociated skirmishes.

You only build units between battles and each territory you own is able to create different weapons of destruction. You can then shuffle these around the galactic map to ensure you've got enough reserve forces in orbit around the next planet you stoop to conquer, but without leaving your home territories undefended. When the time comes to stage a battle (whether you're taking out the defensive space forces or staging a land invasion), you allocate a starting force then head into the fray; the only reinforcements available to you will be whatever you've left waiting in orbit.

If you lose the fight, it isn't an immediate game over and the need to reload, but instead a minor or major setback. Build up another army and give it a second crack, unless, of course, you're so low on friendly planets by that point you've got no cash to build with. With the option to play out or auto-resolve battles, it's a pleasingly grand

Bournemouth train station will be very different in 2049.

perspective on *Star Wars*, and a fantastic multiplayer endeavour, as two of you squabble over key planets.

But it's not enough to make this the classic it could have been. The dropping of the space battle ball seriously grates, as does the inability to build up a truly galactic-scale army. A gleeful barrage of cameos from the films' supporting cast (Admiral Ackbar! Wampas! Expendable Ewoks!) makes significant quantity compensation for the limited quality, but it's all too clear that the great *Star Wars* RTS is yet to be made.   **Alec Meer**

We meet at last
Emperor Palpatine versus a tank

As is the wont of every modern RTS, *Empire At War* features hero units, expensive to summon but able to single-handedly change your fortunes. Most amusing is letting old man Palpatine lose on to Rebel forces – he may have a face like dog food, but he's sure handy with a lightsabre.

Needs 1GHz CPU, 256MB RAM, 32MB 3D card

Wants 2GHz CPU, 512MB RAM, 64MB 3D card with shaders

Net gaming 2-8 players versus or co-op, online or LAN

Discuss pcformat.co.uk/mag/empireatwar

76% **PCF says...** "Visual splendour, but we find its lack of (3D) space disturbing."

This is MackIzmo. See what we did there?

Meet Emily, the big blue robot. She likes long walks in the park and annihilation.

Snug cycling shorts aside, the majority of combat is deeply unimpressive.

Look at that scenery! Where do they get their ideas from?

DAILY GRIND

RF Online

Including giant robots, anime elf ladies, magic and lasers. Why isn't this amazing?

Price £30 + £8.99/m **Publisher** Codemasters **Developer** CCR Inc. **Web** www.codemasters.co.uk/rfonline

Playing the beta of this rather hopeless MMO, the nonsensical translation of the original Korean felt excusable. But finding that there was no improvement at launch confirmed all suspicions – *RF Online* is hoping to ride its gimmick over the finish line, ignoring the hunks of rusting debris in its way.

Its gimmick is the PvP worldwide battling, as the three races – Accretia (hulking robots), Cora (fey Elves), and Bellato (odd midget people, with pet robots) – compete for the planet. And it's not so poor an idea. Rather than the

BUY THIS IF YOU LIKE...

>> **World of Warcraft**
Blizzard
>> **City of Heroes**
NC Soft
>> **PlanetSide**
Ubisoft

simple but effective all-out shooty fest of *PlanetSide*'s rumble for territory, *RF* embraces RPG themes. The higher-level characters will be dishing out damage, while the lower ones mine for ore, all working together in daily battles. Which would be interesting, were playing the game the least bit pleasurable.

BATTLE FATIGUE

The descriptions are such gibberish ("the strong gravity action presented the strong physical ability to the Bellato people while it had them have the short builds") that it's hard to make an informed choice of race, class and weapon. A (thankfully) skippable tutorial agonisingly explains moving a mouse, but fails to give you any idea of anything the game might be about, leaving confused players to ask each other for help in the cumbersome chat window.

Korean MMOs are distinctive by their focus on the 'grind'. While the majority of Western games avoid asking the player to collect 800 rat tails, Korean gamers embrace it. *RF* certainly goes deeper than its peers, but it doesn't remove the agony of mindless drudgery. Every 'quest' is to kill 20 of something,

or pick up 10 of a drop. The balance is such that tasks are given to you two levels early, meaning you need to hang around leveling on the same dreary creatures, before rinsing and repeating. The interface is a disaster, each window offering its own unique frustration. And combat is easiest left to the auto-attack.

The notion of a three-sided planetary battle is an engaging one, but so far the surrounding game is not good enough to justify grinding toward it. It's all about the level 25 and above PvP if you believe the hype, but you'd need to be immune to grind-fatigue (and bad game design) to get there. We'll check back with *RF Online* in a couple of months to see if things improve enough post-grind to justify your pennies. **John Walker**

Cough, drops
Doctor, his health is in the balance

Everything you could possibly need falls from what you kill, with so much excess booty left over to sell that you become ludicrously well off. Health is so ridiculously cheap that you can buy it indefinitely, and hence the usual mortal fear of dying in PvE battle is all but non-existent. Sigh.

Needs 800MHz, CPU 256MB RAM, 64MB 3D card, broadband

Wants 1.5GHz CPU 512MB RAM, 128MB 3D card

Net gaming Online only

Discuss forum.pcformat.co.uk/mag/rfonline

45% **PCF says...** "If there's an intriguing idea buried within *RF Online*, it's suffocating."

UNCIVILISED

Galactic Civilizatons II
Dread Lords

At last: Space Pirates Of The Caribbean

Price £30 **Publisher** Koch **Web** www.galciv2.com

Standing on the shoulders of a giant, in the shape of the *Civ* series, *Galactic Civilizations* appeared to critical acclaim a few years back.

Expanding your empire in this sequel involves colonising planets, building limited improvements, tapping resources and then kicking the plop out of all and sundry. Of course you can always plough the diplomatic furrow instead, bartering with prolapse-faced aliens.

Research takes the form of a tech-tree that would put *Civ*'s to shame. Pity the benefits of each tech take so long to impact on the game. It's not all bad – a few neat touches will bring a tear to old-skoolers' eyes, such as the random generator for invasion battle odds. It's not enough to wow those spoilt by *Civ IV*, though.

Shoot or trade, it's entirely up to you.

Needs	800MHz CPU, 256MB RAM, 32MB video card
Wants	2GHz CPU, 512MB RAM, 128MB video card
Net gaming	None

68% **PCF says…** "Shrivels in the shadow of Sid Meier's mighty *Civ IV*."

PEANUT HUGGING

Rugby Challenge 2006

Cauliflower ears at the ready…

Price £30 **Publisher** Ubisoft/Hip Interactive **Developer** Swordfish Studios

Last month we sampled the dubious delights of EA's rugby sim and, attempting to cash in on the recent Six Nations tournament, this month we have Ubisoft's. *Rugby 06* had us tearing our gumshields out in frustration at the lack of controller re-mapping and the complex player moves. *Rugby Challenge* is a simpler affair.

There's a nice balance in the forward and back play. When a ruck forms you can choose to add or remove players from the mass of prone bodies. This enables you to throw in another forward if it looks like tipping the balance, making the forward play more dynamic and the game more fluid.

Rugby Challenge pips EA's offering by virtue of its simplicity. It's also got a longer shelf life thanks to the bonus challenges and career mode. Unfortunately it doesn't quite do the sport justice, but it's still an entertaining and engaging arcade bash.

Top down, it all looks very Benny Hill.

Needs	1GHz CPU, 256MB RAM, DX9 3D card
Wants	1.5GHz CPU, 512MB RAM, 256MB DX9 card
Net gaming	None

72% **PCF says…** "By no means a perfect sim, but a playable effort."

Also out
By Dave James
GAMING ROUND - UP

Loco Mania
Price £13 **Publisher** Lighthouse Interactive **Web** www.loco-mania.com

On first glance you might well take this for 'Train Obsessive Tycoon Plus', but you'd be wrong. Instead of trading in stocks and shares and track laying, you're just responsible for directing locomotives. It's like a busman's holiday for striking train staff.

The aim is to take each train to its required exit point, stopping at stations. You can compete against the clock or aim for a target score. This isn't frantic enough to be totally addictive, though.

Needs	1GHz CPU, 256MB RAM, 32 MB 3D card
Wants	1.5GHz CPU, 512MB RAM, 64MB 3D card
Net Gaming	None

62% **PCF says…** "Good, but without the 'must keep playing' factor."

Noddy and the Magic Clock
Price £10 **Publisher** Mindscape **Web** www.mindscape.co.uk

We do always say this, but games for children need to be snappy to engage their fragile minds. When they hark back to the dark ages of running from the CD, you know that you'll be suffering long load times all so that Noddy can give your child a few activities, like telling the time or memory games, strung together by a series of animations taking you around Toy Land, the rural nightmare that acid built.

Needs	550MHz CPU, 256MB RAM, 32MB DX8 3D card
Wants	1GHz CPU, 512MB RAM, 64MB DX8 3D card
Net gaming	None

44% **PCF says…** "Unless your child is Noddy obsessed, stay away."

Gridwars 2
Price Free **Publisher** Mark Incitti **Web** www.incitti.com/blitz

Those with marshmallow-toasting Xbox 360s have been gloating over the instant classic *Geometry Wars Retro Evolved*. Appearing on Live Arcade for a paltry sum, the simple shooter is arguably more fun than the boxed titles. Thanks to Mr Incitti we can now play our own version for absolutely nothing. Featuring dual-analogue controls, one for movement and one for shooting, this triptastic shooter will keep your retinas burning into the wee hours.

top gear PCFormat

Needs	1.4GHz CPU, 512MB RAM, 128MB DX9 3D card
Wants	2GHz CPU, 512MB RAM, 256MB DX9 3D card
Net gaming	None

80% **PCF says…** "Addictive and eye-busting. Plus it's free, too."

R.I.P.
Price $20 **Publisher** White Elephant Games **Web** www.elephant-games.com

From the sublime to the utterly pointless now, with another shoot-'em-up. From a static point on the screen you have to defend your turret from wave after wave of poorly drawn sprites. There are power-ups and a few skills you can deploy to help you clear the screen, but realistically you're not going to be playing long enough to care. There's no skill to it apart from being able to use a mouse. The worst thing is, this nonsense actually costs money.

Needs	1GHz CPU, 128MB RAM, 128MB DX9 3D card
Wants	1.2GHz CPU, 256MB RAM, 256MB DX9 3D card
Net gaming	None

45% **PCF says…** "Slightly more entertaining than Noddy."

PCFormat workshops
Get more from your PC today

OUR PROMISE
Every month we bring you the biggest and broadest selection of tutorials around
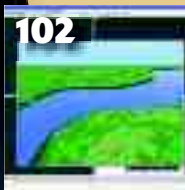
THIS MONTH

98 » GAMES
Get your face in Quake IV
If you want your own horrifying visage to be the last thing your opponents see before they expire at the hands of your railgun, then the fabulous open source *Blender* rendering program and our in-depth tutorial is all you need to satisfy your fantasies. We're using Games Ed James Carey's mug to make up for printing *that* TrackIR photo last month.

102 » GRAPHICS
World Builder 3.6
The second part of our guide to creating fantastic and naturalistic scenes using this impressive 3D rendering package. This month, we conclude our tutorial with details of how to add water and lighting effects to really bring your scene alive. With a little work (and perhaps a frame) you could have a landscape that would put Turner to shame.
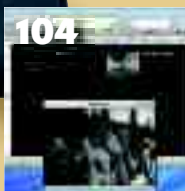
104 » VIDEO
Copy movies to an iPod
If paying for content for your shiny new iPod Video doesn't float your dinghy, how about converting some of those video files that you have already lurking on your PC? Using *Videora* you can turn almost any type of video into a file that your iPod Video can understand, and with portable movies to stave off travel-induced boredom, the world is your oyster.

106 » WIN XP
WinOptimizer 2005
Is your hard drive so riddled with digital muck that you need a shovel to get to the My Documents folder? Despair no more, because with Ashampoo's *WinOptimizer 2005* that dog-slow disc will be transformed into the paragon of platter-hood it deserves to be. With some careful scrubbing, you'll be rewarded with much improved load times.

9.4GB of PC essentials…
Each month find all you need for the tutorials on the disc, plus extra PC apps and resources…

PLUS

107 » WEB
Tap out your blog entries with the greatest of ease using *Superblogging*, a handy content management tool.

108 » GAMES
The second part of our guide to creating maps for the excellent online shooter *Battlefield 2*. This month we'll show you how to turn that empty bit of terrain into an actual working level, by adding spawn and command points and arranging buildings.

110 » PHOTO
Serif Media Plus is a great tool for anyone who has ever felt like they were drowning in the photos on their hard drive. Consider this a big pair of armbands.

111 » GENERAL
Why spend hours copying everything across to your brand new uber rig when Laplink's *PCmover* can do all the legwork for you?

112 » NETWORK
Don't restrict your wi-fi or GPRS enabled PDA to regular phone calls. You can use the almighty *Skype* VoIP client for free.

114 » CODING
The final part of our *REALBasic* tutorial sees us finishing our art gallery and browsing it with a realistic look of haughty disdain.

ON THE DISC
Please note that not all the programs mentioned in Workshops are on the CD edition of *PCFormat*. Check page 6 for more info.

Ben Harling's guide to Blender's hotkeys and buttons will make modding Quake IV easier

Right-click Select vertices, faces, objects, practically anything.

Middle-click Hold to rotate the view in 3D. Drag with **[SHIFT]** held down to pan.

Mousewheel Zoom in and out

[TAB] Enter and exit Edit Mode. You can only manipulate verts when you are in this mode.

Numeric [1], [3] and [7] Front, Side and Top views respectively.

Numeric [5] Switch perspective mode, either orthographic or real perspective. Create new geometry in Orthographic.

[E] Extrude. Always select Only Edges when prompted to extrude full faces.

[G] Move vertices or objects. If grabbing in a rotated 3D view, use **[X], [Y] and [Z]** to constrain movement along an axis.

[F] When in edit mode with four verts selected, press **[F]** to create a new face. Only do this with groups of four verts.

[SHIFT] + [K] Cuts a face in half. Press this with a four-sided face selected, then drag a line across the face. Use the 'midpoints' option to make even cuts. Be careful not to make three-sided faces.

[Z], [ALT] + [Z], [SHIFT] + [Z] Change the shading to examine your model.

Learning the hotkeys and their functions will speed up the process enormously.

Have your say forum.pcformat.co.uk
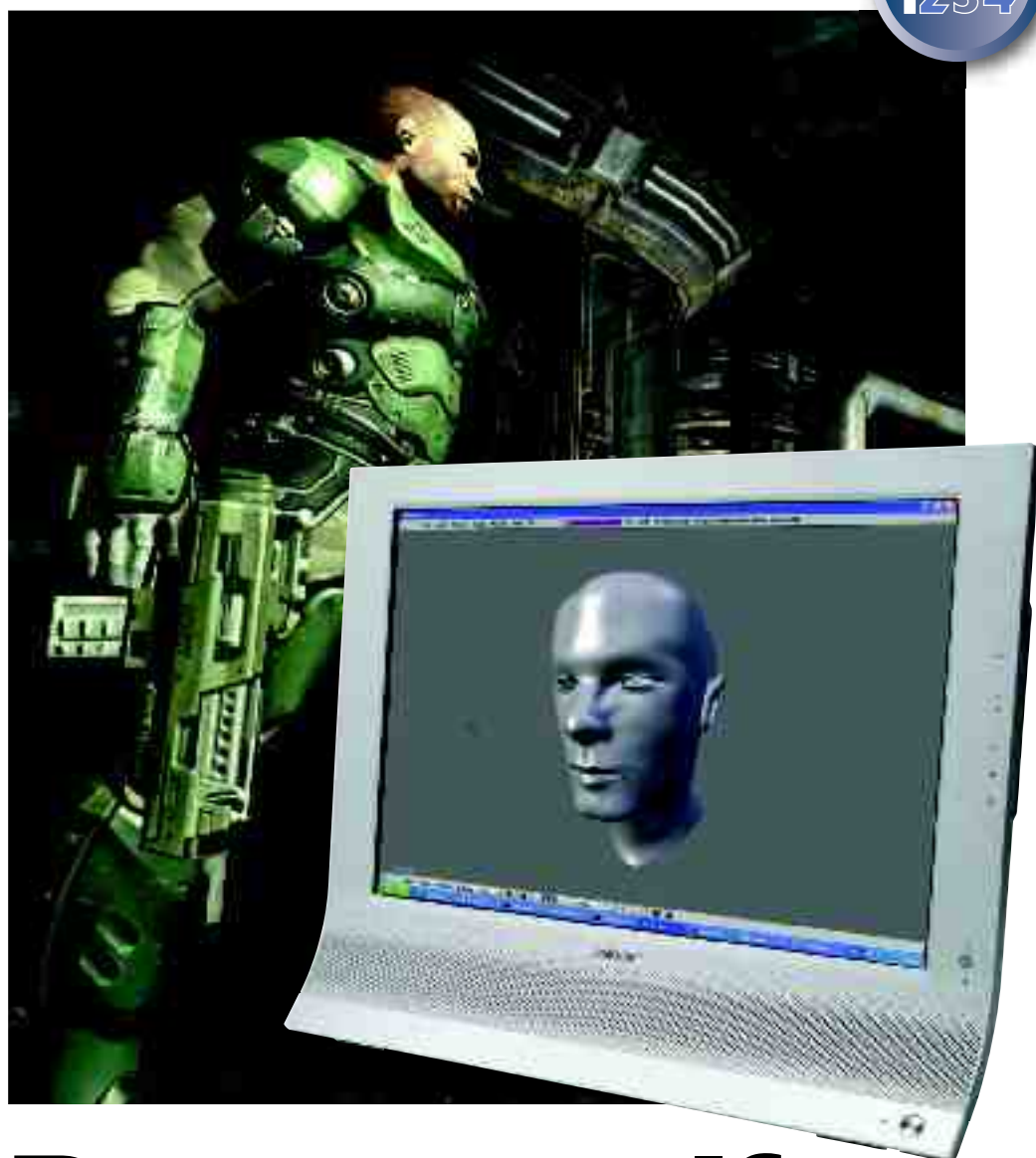
Put yourself in *Quake IV*

Ben Harling teaches you how to mod the superlative shooter without spending a penny

With last year's withdrawal of Discreet's *GMAX* software, those wanting to create fresh content for today's modern FPS games are having to turn to alternative tools to make that content. Luckily, the gap created by *GMAX* has been filled by *Blender3D*, a totally free open source 3D modeling program. It works on almost any platform, and has all the features of the best 3D software available, including a movie-quality rendering engine, and full tools for creating content for games, or even complete games from scratch. It is more than capable of producing characters for *Quake IV*, and that is exactly what we'll show you how to achieve in this series, spread over the next four issues.

TOOLS OF THE TRADE
While things have become progressively simpler for mod authors wishing to stamp their mark on id Software's games, the vast increase in detail levels offered by the *DOOM 3* engine means that the responsibility now rests on the shoulders of the artist creating models, rather than the programmer trying to shoehorn them into the engine. Full scene bump-mapping effectively eliminates polygon

"It has movie quality rendering and full tools for making game content"

limits, so characters can now be modeled to a stunningly high level of detail, which can take quite some time to master.

There are a few prerequisites that you'll need to follow this tutorial, but most people should find they have everything already. First off, appropriate hardware. You will need a three-button mouse to use *Blender* effectively, so make sure your pointing device is sufficient. You'll also find things a lot easier with a set of numeric keys on your keyboard, so it's often best to use *Blender* on the desktop rather than a laptop. That said, however, you can also make *Blender* emulate a numeric keypad, but we'll tackle this in greater detail in a moment. Finally, you will need a design for your character, and photos of your head. For both the head and body, you need a front and side view, and it's best to try and photograph your head when it's lit from a couple of different directions, to eliminate unwanted shadows, but still see enough shading to know where the details are. You should crop the images so they are square, and resize them to 512x512 pixels. When cropping, take good care to make sure the different views are the same proportionally. For the body, we've drawn horizontal lines from the major features in the front view, to make sure everything is the same scale on the side. With the face, its best to open up both views in your image editor, and do a few careful crops, measuring the different parts of the face to make sure the vertical distances (for example the height of the nose) are the same in each image. This will become very important later on, and a bit of careful planning here can save you some terrible headaches further down the line. When ready, create a folder for your character project, and save the images, labeling them 'front' and 'side.' We've used jpegs for this, but *Blender* can handle quite a few image types, if you have a personal preference for something else.

AMEND A BLENDER
To use *Blender* properly, you'll also need to install the Python programming language, which contains many libraries that enhance *Blender*, and extend its capabilities. While you can use *Blender* without Python, some parts of this tutorial will require it, so it's best to get the Python install out of the way first. To do this, just run the Python installer, which you'll find on the coverdisc this month, and follow the standard steps to install the app. When prompted for a folder, it's best to keep the path as simple as possible and accept the default c:\python24, or whatever your root drive is. If you're on Linux, you can probably skip this step, as Linux often comes with Python pre-installed. Finally, you will probably have to tell the system where to find your new Python install. To do this in Windows XP, right-click the **My Computer** icon, and select **Properties**. Next click the

Get your game face on
Converting Games Editor James into a 3D model
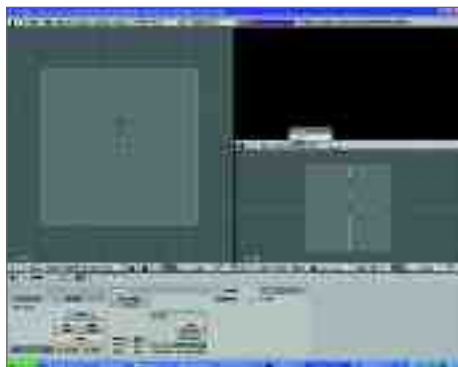
1 Open **BasicPlanes.blend** from the disc. The front plane (in the left-hand viewport) should be selected and with the mouse in this viewport, press **[F]** to enter face-select mode. Move to the top right window, click **Open** from the **Image** menu, and open your front face image.

2 The front image should now be mapped onto the plane in the left viewport (which is the front view), but it may be the wrong way around. If so, in the **Image** window, hit **[A]** to select all the verts, then **[R]**, then hold **[CTRL]** and move the mouse to rotate the mapping by 90°.

3 Move the mouse to the left-hand 3D view, and hit **[F]** to exit face select. Move to the side view, and right click the other plane. Repeat Step 1 and 2 to map the photo onto the side plane, then press **[F]** again to exit. Hold the middle button and drag in a 3D view to admire your work.

4 Move to the line dividing the right-hand views so you have a two-pronged cursor. Click the middle button then **Join Areas**. Move the mouse upwards and click. Now press numeric **[3]** to go side view. In the left-hand window, press the numeric **[1]** to change that to front view.

5 In the front view, hit **[SPACE]** and select **Add→Mesh→Plane**. Now press **[S]** to scale the plane so it fits in the center of the face. If you need to move the plane, press **[G]** to grab it, do this in the side view too so that it lines up. Then press **[R]** to rotate it so it matches the profile.

6 Hit **[TAB]** to exit edit mode. Click **Center New** in the **Mesh Buttons** pane to re-center the object. In the **Modifiers** pane, click **Add modifier**, and add a **Mirror** modifier. Leave the axis as 'X' and set the merge limit to 0.0200. Hit **[TAB]** then **[G]** and move the plane to the right.

Turn the page for the rest of the tutorial...

Facial mapping continued

Are you ready for your close-up?

7 In the front view, press **[A]** to deselect all, then **[B]** for box, and select the two right-hand vertices closest to the eye. In the side view, press **[G]** and move them back to form the curve of the nose. This will be mirrored on the left. Hit **[A]** then **[B]** and select the bottom two verts.

8 Now press **[E]** to extrude the bottom edge of the plane down in the side view. Repeat this, using **[G]** and **[R]** to adjust, until you have a good profile. Select individual verts with the right mouse button and adjust them in both views using the **[G]** key, until it is similar to this picture.


9 Next, we'll extrude around the hood of the nostrils. Again, select two verts and press **[E]** to extrude them, remembering to adjust them in both viewports. On the final extrusion, tuck the verts in on the front view to get the right shape. Select the bottom vert on the last face you made.

10 Extrude that vertex, and line it up with the bottom-right vert of the central faces. Select both and press **[S]**, then enter **0** in the upper row. Hit **[Enter]**, then click **Rem Doubles**. Now select all verts in the loop, and press **[E]**, click **Only Edges** then hit **[ESC]**. Use **[S]** to scale them.

11 Believe it or not, you've done the most complicated part. The rest is mainly repetition. Finish the nose by extruding, scaling and moving the nostril loop twice more, then press [A] to select all verts, and press [CTRL]+[N] to fix any problems. Now press the **Set Smooth** button.
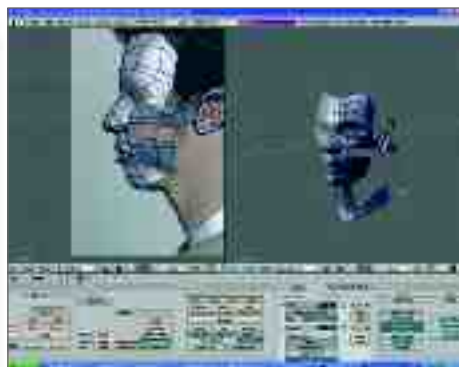
12 Continue building the face using the same processes. If you need to fill a gap, select four verts with the right mouse button, and press **[F]** to make a new face. We've included the final head on the disc, so refer to that if you need more pointers. Next month we'll tackle the body.

Advanced tab, and then the **Environment Variables** button. In the next dialog, look in the **System Variables** box for a variable named **Pythonpath**. If this does not exist, click on **New**, then enter **Pythonpath** into the first box, and C:\PYTHON24;C:\PYTHON24\DLLS;C:\PYTHON24\LIB;C:\PYTHON24\LIB\LIB-TK into the **Variable Value** box, assuming you installed Python into C:\PYTHON24. Click **OK** and fire up *Blender*.

MODEL BEHAVIOUR

Blender is based around the use of hotkeys, and you'll find you can model any object very quickly if you know them well (see the column on the left). Also, be sure to save several different versions of your model as you progress, in case you have to go backwards. Make sure you take time to look around your model using the middle mouse to rotate the 3D view. You can switch perspective modes with the **[5]** key on the numeric keypad, to get a proper idea of the shape you are creating. Remember, to switch back to a front view, press numeric **[1]**, while **[3]** will take you to a side view. You should always be in one of these views when creating or moving vertices, to avoid moving them in un-predictable directions. Finally, we've provided several files for this model at various stages of completion on this month's cover DVD, so if you're feeling stuck, refer to these for some pointers on how to proceed. At this stage, you don't need to worry about the amount of polygons your player has, as we will actually be producing two meshes, one low-poly for the game, and one high-poly, which we'll use to create the bump-map details. In the next part, we'll create the body to go with the head, and have a look at building a skeleton so he can move. If you want to know more about *Blender*, or find more tutorials, check out either **www.blender.org** or **www.elysiun.com** for masses of useful resources. **PCF**

"With full scene bump mapping characters can be stunningly detailed"

Creating 3D worlds

Nick Mohr puts the final touches to a *WorldBuilder* 3.0 scene

We created a scene in *WorldBuilder* last month and explored some of its basic features. Now you've got to know the interface, we'll take it to the next level and start exploring some of the more useful and advanced features, like adding water and employing advanced lighting techniques.

As always with such a comprehensive piece of software, it's impossible to cover every aspect of *WorldBuilder* here. We've skipped over some of its more arcane features here, but you should take your time to explore the options crammed into each of *WorldBuilder*'s drop-down menus.

WONDERFUL WORLD

If you haven't installed *WorldBuilder* yet, you can find it on both this and last months' coverdiscs; once you've registered the application and received the activation key, you'll have a fully featured copy of version 3.6 with no time or save-related limitations. You can find a demo of the latest version of the software at **www.digi-element.com**, and take a look at the Upgrade boxout below if it tickles your fancy. **PCF**

Upgrade

Digital Elements is offering you an upgrade to WorldBuilder Genesis 4 for just $79 (normally $199), or WorldBuilder Pro 4 for $499 (normally $699). Knowledge Modules are each only $49 (normally $79).

sales@digi-element.com

1 Before adding any water elements to our embryonic scene, we must create a simple terrain that it can occupy, such as a river bed. Draw four skeleton lines in parallel then to add depth, lower the inner pair of lines about 10 units along the z axis.
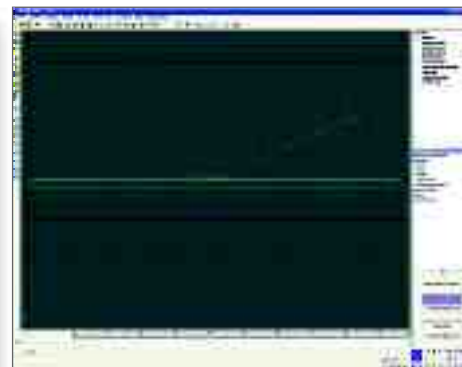
2 To create the water object, locate and click the **Lake** button on the left side of the *WorldBuilder* interface. Highlight the new **Water** object from the **Properties** window on the right and move it so it lies below the landscape but not below the riverbed.
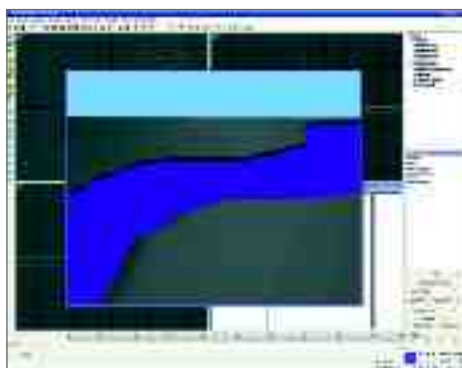
3 Switching to **OpenGL mode** in the camera view will give you a much better idea of the water level, and it also renders the scene almost immediately. You can increase the speed of the render further by right clicking and hiding objects from the Properties bar.
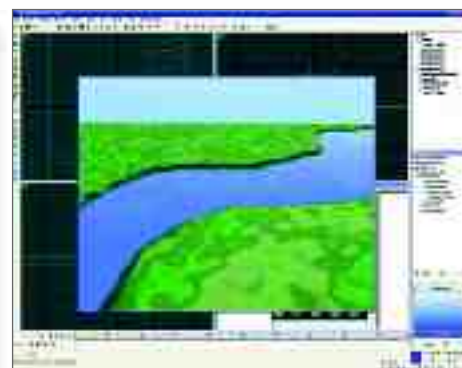
4 Water colour and other properties can be adjusted from the **Water0/Area 1** sub-properties window. Transparency can be altered under the **Phong Photometry** menu by lowering the ambient and diffuse values. There are numerous options to help fine tune your scene here.

Creating ambience The subtlest effects often return the best results
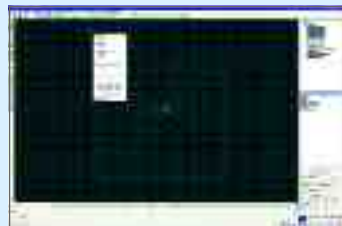
1 Light-sourcing is the primary method of illuminating your scene, and controls how shadows are cast upon the terrain. This light always points at the centre of the landscape and can be rotated in any direction by right-clicking on the **Sun** icon. Manipulate the light source until you're satisfied with it.

2 Special filter options such as Haze and Fog can be added by selecting **Scene** in the Properties window then right clicking on **Filters** and selecting **Add** in the sub-properties menu. In this scene we have added a subtle yet noticeable **Haze** effect to the scene and adjusted its colour to light grey.

3 In this final scene we have added a rainbow and some flowers to brighten things up and add focal points to the landscape. We have also put the **RGB Levels** filter to work, leaving its setting to default to counter the effect of the Haze filter. This generally gives a more vivid, realistic feel to the scene.

4 Once you are happy with all the changes you've made and your scene is complete, you can attempt the final rendering process. Click **Render/Final Render** and adjust the image to a higher resolution. Select a location to save your image using the **Insert** button, then click **Render** to finish it off.

If rumour is to be believed, the *real* iPod video is on its way. Alec Meer predicts away…

There's a buzz around Apple fansites that this Easter – the 20th Anniversary of Steve Jobs' Californian computing giant – will see the release of a dedicated video iPod. Though it's usable, there's few would argue that the video capabilities of the current model are any more than a basic bonus feature. Rumourmongers have it, though, that the follow-up is different – the entire front of the new model, they claim, is a 3.5" widescreen.

VAPOUR

Apparently, there's no jog-wheel, but instead a virtual wheel pops up when the screen is touched. No word on capacity, dimensions or battery life yet, or on whether making the screen touch-sensitive affects its clarity, but it's exciting nonetheless. Of course, this is all unsubstantiated – and the number of phantom iPods over the years is more than we can count – but the success of video on the iTunes Music Store surely makes an improved video iPod a shoo-in. Hopefully it'll also make converting existing files a cinch, rather than requiring third-party software or an expensive *Quicktime Pro* registration…

The latest iPod is a big success, but it's hardly the portable movie player king.

Have your say forum.pcformat.co.uk

Copy movies to your iPod

The video iPod is something of a false prophet. It's fine if you want to buy overpriced TV episodes or music videos from the iTunes store, but if you want to convert your existing movie collection to it, you're bang out of luck. Unless you fork out for *Quicktime Pro* or one of the various retail conversion apps on the high street, but *PCF* guesses you don't want to do that. So, here's how to convert any movie file for free, thanks to the excellent (if a little less than intuitive) *Videora iPod Converter*, which you'll find a copy of lurking on the coverdisc. Though 90% of your efforts will turn out just dandy, there is a margin of error, while retaining widescreen aspect ratios is quite the headache. If you're in need of any assistance the following walkthrough doesn't provide, be sure to stop by the splendidly helpful *Videora* forums at **www.pspvideo9.com/forums/index.php?c=8** and make yourself comfortable. **PCF**

JARGON BUSTER

>> BITRATE
How much data is in the file, usually measured in kilobytes per second – the higher, the better. This can be constant (CBR) or variable (VBR).
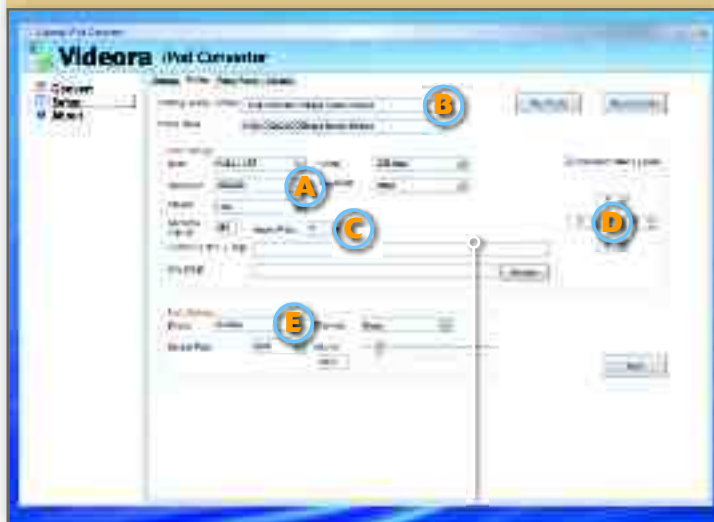
>> TRANSCODING
Converting a media file into a different format. For instance, a DVD is in the MPEG-2 format, while the iPod uses H.264-encoded files.

>> RESOLUTION
How many pixels an image/movie/screen contains. A 320x240 movie is 320 pixels wide and 240 high.

UP CLOSE VIDEORA

A SEE CLEARLY NOW
The iPod's screen is 320x240, so you're best off encoding your video at that – though it'll play back MPEG-4 files as high as 480x480 (not H.264 content, mind). You can go for a lower res still if you're wanting to keep file size low.

B BYTE-GASM
The higher the bitrate you choose, the better quality the video – but the much larger the file will be. Is being able to see an extra crevice on Tom Cruise's face really worth sacrificing room for a few more albums?

C PERIPHERAL VISION
Widescreen or square? The iPod's screen is standard 4:3 ratio (the more traditional shape of a television screen) rather than the DVD and widescreen TV standard of 16:9, so you're best off using that for portable viewing. If you want to link the 'pod to a telly, though, 16:9 is best, but you'll need to crop the video to letterbox proportions first.

D BIT OFF THE SIDES
Speaking of cropping, this is where it's done – either to remove the black bars from the top of a file to make it widescreen, or to trim the sides of a widescreen file to make it 4:3. Unfortunately, you'll need to know exactly how many pixels you want to trim by. E.g., if your DivX movie is 720x480; you'd want to crop this to 640x480 so it can then be neatly resampled to the iPod's 320x240 screen.

E AURAL PLEASURE
Sound bitrate is, in general, less crucial than video bitrate, but the lower you go the tinnier and quieter your movie's audio track will be, though file size will be reduced. Essentially, bitrate decisions are down to striking a personal balance between acceptable file size and acceptable quality.

Tricking Apple
Make the iPod play movies supposedly beyond its official means

1 The H.264 codec offers good quality at lower file-sizes, but at above 768kbps it won't play. It's beyond the iPod's abilities, says Apple. Poppycock, says *PCF*. Go to **Edit→Preferences→iPod** in iTunes, and check **Manually manage songs and playlists**.

2 Now copy any sub-768kbps video to your iPod via iTunes. Take a note of its exact filesize. Do a search with **[Windows] + [F]**. Put *.mp4 under 'all or part of filename', and select the iPod's drive. Include hidden files and folders under **Advanced options**.

3 Using the filesize you noted earlier, identify which .mp4 is the file you copied. Copy its filename (it'll be gibberish like HYWF.mp4) and rename your greater-than-768kbps file to that. Replace the file on the iPod with it. Job done: iPod successfully fooled.

Like the cinema, but smaller
Re-encode any movie file for your video iPod

1 It may be you have a vast archive of illegally downloaded movies – it's not for us to presume. But for the sake of argument, we're using a copyright-expired, legal movie file from **www.archive.org** – the gloriously camp *Radar Men from the Moon*. Download the full MPEG-2 version.

2 Install and run *Videora iPod Converter* from the coverdisc or **videora.com**. If you're baffled by what you're presented with (the annotations to the left will help), simply select 'One-Click Transcode', and select your video. It'll take 15mins to 2 hours depending on your processor.

3 Now plug in your iPod, load *iTunes*, then browse to the folder the finished movie ended up in (by default C:\Program Files\VideoraiPodConverter\Videos). Drag the file into *iTunes* and you'll see a thumbnail pop up in the Videos tab; you can then drag this to your iPod.

4 Is the finished file too big/small/low quality? Seize control of your destiny. Click the **Setup** option on the left of *Videora*; from the resulting menus, then go to **Profile picker** for quality settings. Some are described in codecs, others more helpfully, such as "Movie <2hrs".

5 Choosing one will give you greater detail on what to expect, plus a filesize calculator – enter the length (in hours and minutes) of your video file and *Videora* will tell you how many megabytes the transcoded movie will occupy. You can see the effect of different bitrates from the right.

6 Still not happy? Choose **Profiles** from the options on the top row, and specify your own settings. Click **New Profile**, type in a name of your choice, then take your pick from the options. Don't be fooled by the limited drop-down lists – you can manually type any value you like.

Reclaim your drive

Mike Channell cleans up with *WinOptimizer 2005*

Anyone who uses their PC for more than tapping out the odd *Word* document will realise that the constant ebb and flow of installing and uninstalling applications can seriously gum up your hard drive. Temporary files, obscure registry entries and a veritable cascade of cookies are scattered across your disks, with all the order and predictability of a shot from an elephant gun. Rounding all the digital detritus up manually would take an age, which is why Ashampoo's *WinOptimizer 2005*, to be found in full on the coverdisc this month, is the perfect program to do some much needed spring cleaning.

SPRUCING UP
In this workshop we're going to concentrate on getting rid of temp files, but *WinOptimizer* contains a host of other tools. By the end of our walkthrough you'll be ready to dust every corner of your system. To get your free keycode to unlock the program, simply click the big button on the splash screen. This will redirect you to Ashampoo's website, where you can register. Once you have the serial number, click on the **Enter Key** button and punch in the numbers **PCF**

> **"Rounding up all the digital detritus manually would take an age"**

WinOptimizer 2005 will keep your precious PC in tip-top condition, and rid it of unneccesary clutter in moments.

Upgrade
If you're pleased with your spick and span PC, and want to keep it that way, you can upgrade to WinOptimizer Platinum 3 for a reduced price of $39.99 (approx £25), giving you more

www.ashampoo.com/products/1306/upgrade_edition.

Clean sweep
Keep your PC shipshape the easy way

1 This is the main control panel. The **Cleaning Tools** section contains applets for optimising your drive, registry and internet files, and the ability to change file associations and permanently wipe files. We want the **Drive Cleaner** in **Cleaning Tools**, so click on that.

2 The **Drive Cleaner** tool allows you to set up exceptions or specifying search rules. You can access these by clicking **Configure the options of this module**, but selecting **Search for unnecessary files**, and then clicking **Next** will also scour your rubbish-riddled drives.

3 Now you can can put your feet up and convince your significant other that you're doing 'housework'. When the trawl is over, *WinOptimizer* tells you if there are files on your system that can be deleted. Click **Show Details** to see what it's turned up.
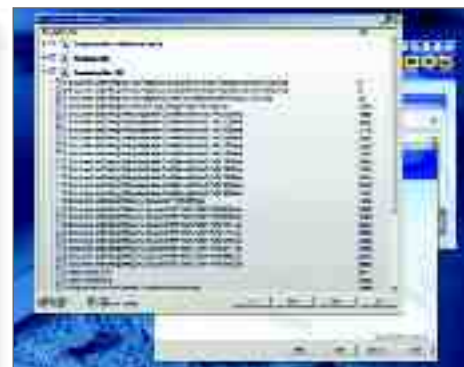
4 Check through the list of files to see if there's anything you want to keep. Once you're satisfied nothing vital will be binned, click **OK** and then **Next** to delete the files. Now that you know the basics, feel free to experiment with the other tools in this handy app.

ON THE DISC

WinOptimizer 2005
Spring clean and speed up your system with a selection of intuitive, time-saving tools. If you've ever dreamt of a clutter-free computer, this is the answer.
www.ashampoo.com

Firefox
This web browser is steadily chipping away at *Internet Explorer*'s once untouchable position at the top of the pile. If you haven't already, now's the time to find out why.
www.firefox.com

Be a superblogger

According to **Dan Grabham**, a good website is all about the words…

Content management systems are boring. They drive all of the finest sites on the globe, yet are distinctly unsexy and, what's more, hardly something anyone with an ounce of sanity would wish to get involved in. They're not exactly easily to access either.

BUILDING SITE

Though you might not need a high-end CMS, you might still need to put a lot of information online. *Superblogging* hasn't got much to do with blogs as we know them, but it is a simple web publishing tool that enables you to upload page upon page to your website. In short, it's a CMS for the rest of us. It isn't a WYSIWYG web editor, since it's designed so you can easily input content into generic fields. *Superblogging* then marries this with customisable templates and then publishes it all to the web. There's a full version of Straight2Web's *Superblogging 2.07* on the disc – it's a 30-day trial, so to unlock it for unlimited use you'll need to visit **www.straight2web.net/fpoffer.htm** before August this year to get your free serial code. **PCF**

Upgrade

You can save 20% off the price of Version 5.59 of Superblogging, the latest iteration of the software. You'll get more template designs and free support. Simply quote coupon code CDfpoffer06 when buying.

www.straight2web.net

1 Make sure you start a **New Project** from the **File** menu before beginning – try not to alter the template that comes up when you start the app, it'll only result in headaches. Give your project a file name, then choose an appropriate folder to store everything in.

2 Here, we've created three page groups. Each of these so-called Menu groups is a different area of our lovely site about bob-sleighing. We've also opted to have two columns on our 'What we offer' page. This will ensure we put the correct content on the page so it fits the template.

3 Now it's time to actually flesh out the skeleton with some all-important content. We've clicked the **Add Content** button to add pages to some of the menu areas. We've added an extra sub-page on the left using the plus symbol buttons, so there'll be two pages within this section.

4 You'll also see the **Site Layout Viewer**, so you're able to click on any area or page of the site and add content to that area. Now it's time to add some images. Click the link on the left and find your image file. These are then added to the content on the page.

Publishing your site Put your content into a template and publish it online

1 Now we need to build our site. This basically means the app has to marry the content you've entered with the templates you want. Click **Build Website** on the toolbar, then go to **Design Selector** so we can actually choose a look that's not going to immediately provoke brainache when someone sees it.

2 As the site is built, *Superblogging* will generate the code needed to form the pages. All the code is compatible with all the standards that matter, so even Apple's *Safari* will have no problem with your site. You can see the lower part of our main page here. More content will make it far better, though.

3 You can always look at *Superblogging*'s preferences using the **Setup** button on the toolbar. We actually want to upload our site now, so we'll need to give *Superblogging* the relevant FTP details for our web hosting – you can put these into the Setup screen, just as we have done here.

4 The fact *Superblogging* has a built-in FTP uploading facility is rather impressive. Once the app has connected to your server, simply drag and drop the files over as you would in *Explorer*. They'll duly copy to your host and be accessible via the web. Once everything has transferred, you'll have created a site. Simple.

Workshop

Battlefield 2 mapping guide

Michael Lewis and Dave Hart give you the latest news on the upcoming Battlefield 2 patch

With a patch just around the corner, we're taking time to update you on what to expect. We sat down with a few lucky members of BF2 Combat: The Battlefield 2 Tour of Duty, www.bf2combat.net (which we showcased last month), whom DICE invited to test patch 1.2.

Version 1.2 fixes most of the irksome elements of Battlefield 2: players can no longer shoot while jumping, dolphin dive, prone spam, or sprint exploit. You can also now reload while sprinting. Engineers, medics, and special forces can retrieve mines, medpacks, and C4 respectively, but can no longer toss while jumping. The server browser is fixed, permitting filtering. EA and DICE also modified support and sniper kits, augmenting lethality. Grenade launchers, commonly known as "noob tubes," now have smaller explosive radii and a minimum distance before arming.

As dedicated gamers know, major patches often stir controversy, and from what we've seen, 1.2 will be no exception. Though the stingers weren't working when we played, the reduction in the potency of air power is undeniable. This build will affect pilots and gunners dramatically, which will likely have a profound effect on clan and Tour of Duty tactics. The build we played was still not final, so it remains to be seen how the 1.2 will ultimately alter the Battlefield experience.

If you find yourself in this position, it might be prudent to get off the carrier.

After last month's tutorial, your Battlefield 2 map should be taking shape. Player-created content drastically increases the popularity of online games, and Battlefield 2's fanbase is crying out for good new maps – so your work in this tutorial could be in high demand.

In last month's tutorial, we discussed the basics, and sculpted land using the Terrain Editor. This month we've moved on to placing objects, like command points and buildings, and reading your map for play. By the end of this month's guide, with a bit of practice, you'll be able to create functional BF2 maps.

For this month's issue you can use the terrain we made last issue, a stock map, or try editing one of the levels on the coverdisc. We begin by walking you through road creation, and we finish up covering advanced topics like light maps and special effects. **PCF**

Inside the Level Editor

Making your map playable

1 Before you can place objects into your freshly created BF2 map, you need to load them into the editor. You can do this individually or all at once. From the menu select **Mod→Mod Manager** then check all the items in the **Content Editor** tab.

2 Battlefield 2 revolves around capturing and defending control points. Add points by right-clicking on the ground and selecting **Create Control Point**. The name you assign the control point is important, as that's the name that will appear on the in-game map.

"Battlefield 2's user base is crying out for good new maps, so your work here could be in great demand"

6 In addition to overgrowth, you can populate your map with individual trees and bushes also by dragging them from the resource tree. To move and rotate objects into position select the appropriate mode from the toolbar then drag the object by the handles that appear on screen.

Caution: roadworks ahead
If only it was this easy in real life…

1 Create a new road template in the level editor by clicking in the **Editor** window. Your road will appear in the resource window. Assign primary and secondary textures in the **Tweaker** bar. You can also adjust settings like width and the texture blending.

2 Press **[Alt] + left-click** on the terrain to place connection points for your new road. Once you've established the path you want, click on the spline and hit the **Connect** button in the editor window to assign the template you just created to the road.

3 Smooth the ground below the road by pressing the **Apply Spline** button. This will match the contours of the terrain to the path of the spline, permitting vehicles to traverse smoothly. Click **Build Final Road** to turn the road into a mesh.

ON THE DISC

Seaside Raceway
This is a custom non-combat map, created by veteran mapper Elton Muuga. The costal map is centred on a peninsular race track. **www.bf2combat.net**

Matrah City
One of our favourite maps, Matrah City is a high-intensity, beautifully detailed slugfest set in the Middle East **www.bf2combat.net**

The Island
This is author Dave Hart's map created for this tutorial. You can fully deconstruct the island to check out the methods we describe opposite. **www.bf2modding.net/ phpBB2/viewtopic. php?t=45**

Rising Temperatures
[BF2C]TA|LuucEarth's Rising Temperatures is open for modification and not yet packed for export. The map showcases ambient triggers and environment effects which we'll highlight next issue. **www.2mc.us/Rising_ Temperatures.rar**

NEXT MONTH
FINISHING TOUCHES
LIGHT SETTINGS, TRIGGERS, SOUND, AND EVERYTHING YOU NEED TO FINISH YOUR MAP

3 With the control point selected, you can now right-click on the terrain and place spawn points to dictate where the players will spawn in. It important to place several spawn points at each flag so that attackers cannot predict where defends will spawn in and camp those spots.

4 Like spawn points, all vehicles and stationary guns must be attached to control points. With the control point selected, right-click on the ground and select **Create ObjectSpawner**. You can then select the type of vehicle from a list.

5 Content loaded into the editor is added to the resource tree on the left side. To place objects, drag them onto your landscape. Although objects are categorised, finding specific items can be daunting, but with some practice you'll quickly master the interface.

7 You can drag and drop special items, such as water planes and effects like waterfalls, in exactly the same way as static objects like buildings. When adding particle effects like fire and smoke, be careful not to tilt them as doing so can crash the game.

8 All the static shadows in the game are pre-generated in the editor as lightmaps. Select **Compile→ Lightmaps** from the menu to open the lightmap dialog, where you can choose the rendering quality. Be aware though that a compilation can take hours.

9 Regularly test your map with the game in a window as this displays errors if the game crashes. Create a shortcut to **bf2.exe** and add **+fullscreen 0** to the path, then run the game and select **Create Local** from the multiplayer menu. From here you can select and test your map.

Tidy up your files

Geoff Harris restores order to his image libraries with *Serif Media Plus*

The one downside to digital camera ownership is that you can soon end up with an unruly photo collection that sprawls over hard drives, flash cards, CDs and more. Few things are more irritating than being unable to find a shot you're really proud of, particularly if you forget to give it a meaningful name – IMGP0220.jpg, or whatever the camera calls it, is hardly conducive to easy retrieval. So it's a good job we're giving away *Serif Media Plus* on this month's disc, as it's a great way of tracking down photos, plus many other types of digital file. It's not just a photo management tool, either; you can use it to create galleries for publishing to the web, as well as attractive slideshows, screensavers and more. Images can easily be tagged as Favourites, too, making it a great deal simpler to retrieve them in the future.

IMAGE BOOST

Another great feature is the ability to add comments and features to images – these can include when the shot was taken, or what settings you used to achieve a particular effect. Keywords can also be added, which again makes the image easier to track down in the future using Media Plus's powerful search engine (significantly faster and slicker than the Windows search function).

While the application lacks a few high-end photo-editing tools, it does make it simple to convert and optimise images for web publishing. Check out the powerful zoom and scale tools, too, which are great for scrutinising the finer details of a photograph. **PCF**

For sorting images, publishing to the web and creating slideshows, Media Plus is hard to beat – and it's free.

ON THE DISC

ClearScreen FX
Enables professional portrait retouching in minutes. The program smooths the skin of the object while preserving the details. *ClearScreen* works best on large images from digital camera or film scanners with lots of skin details.
www.mediachance. com

IrfanView
Irfan View is one of the best free photo editing programs available, making it easy to view and edit images, convert to different image formats and take screen grabs. Just about every image file format is supported.
www.irfanview.com

Media Purveyor
A free, fast image viewer and media player. Click a few keywords and the program will search folders containing tens of thousands of images, movies and songs to return results instantly.
www.mediapurveyor. com

FastStone Image Viewer
Free image browser, converter and editor that supports all major graphic formats. It has a nice array of features such as image viewing, management, resizing, cropping, fine color adjustments and much more besides.
www.faststone.org

Making a photo gallery

Getting the most from Media Plus

1 *Media Plus* provides a range of templates and styles that enable you to compose a Web gallery from file thumbnails. You can customize the layout as needed. Select the thumbnails you want to include (**Ctrl-click** to select more). Then click the **Publish to Web** button.

2 The **Edit Web Page Layout** window appears next. Once you've selected a template, you can choose from styles – different backgrounds, thumbnail cell borders and so on. You can customise elements of the layout. Experiment with the options until you've got the look you want.

3 Click on **Publish to Folder** and designate a target folder. Then click on **Publish to Web**. In the **Specify Account Details** dialog, enter your ISP's details. Click **OK**. Go to the URL that includes the path to your ISP server. Ask your ISP if you are unsure about your FTP or account details.

4 You can alter the size and style of the thumbnails in your gallery by right-clicking on them. It's also possible to change the arrangement of the images by right-clicking on the background and editing the table style, or choosing a new gallery style altogether.

Fast PC migration

Dave Howell proves that moving to a new computer is easy

You know the feeling when you buy a new computer and unpack it for the first time? You can't wait to see what it's capable of, but then it dawns on you that you now have to spend hours – if not days – installing all the applications and utilities you took for granted on your old PC. The good news is that there's a remedy for that particular headache: *Laplink PCmover*.

MOVING OVER

You'll find *PCmover* on the coverdisc but you'll need internet access to complete the installation. Also, don't forget to make a note of your copy's serial number as you'll need this to install the app. This neat utility isn't a hard drive cloning application like *Norton's Ghost*. Laplink has been a bit more subtle. *PCmover* takes an inventory of your apps, utilities, data and the custom settings you have applied to Windows. When you kick off the migration, all this information is transferred without erasing any of the existing programs or utilities that your new PC may already have installed. Nifty, eh?

If you already have a network setup, then you'll find using *PCmover* a breeze. If you don't have a network, don't worry. You can buy a special USB cable that will connect your PCs together – see the Upgrade boxout below for more details. Unfortunately a regular USB cable won't work, before you get any clever ideas.

What's the catch? There really isn't one, but there are a couple of things to watch out for: *PCmover* isn't designed to move data from Windows XP to an older operating system. If you try and move data to a Windows 98 computer for instance, it probably won't boot when you've competed the migration. And if you have anti-virus software and firewalls installed, you might have to temporarily switch these off to get your computers talking to each other. This is a small price to pay, though, given that if you've just bought a new computer *PCmover* should save you hours of blood-boiling frustration. **PCF**
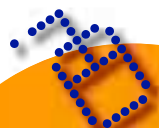
"If you've just got a new PC this should save you hours of frustration"

Prepare for the big move

Make time for a spring clean before you start the migration.

Before you install PCmover it's a good idea to do some groundwork. Delete all the programs that you installed ages ago, but don't actually use. Any demo software that has expired can go as well. All you want left is the programs and utilities that you genuinely want to move.

Once you've done that, it's also worth the time to defrag your hard drive as you'll find PCmover will then perform much better when it actually carries out the migration. The next chore is to scan your old computer for any viruses or spyware (try AVG and Spybot, on the coverdisc every month). The last thing you want to do is move a virus to your shiny new PC.

AUTO START PROGRAMS

When you reboot your new PC after the migration has finished, a program called Start-Up This will run. It handles all the applications that run automatically each time you boot your computer. As many of these relate to hardware on your old PC, you can now decide whether you need these applications, utilities or drivers when you boot your new system.

Update your new PC Move your apps, files and settings with a few mouse clicks

1 You must first run *PCmover* on your new PC. This allows the program to collect information about the resources that your new computer has available. This information will be used by *PCmover* to determine where the apps, data and system settings should go when the old files are migrated.

2 To transfer your data you have a number of options. The easiest and fastest is to use your existing network. Or if you have bought the special USB cable, close down *Pcmover*, plug the cable in and restart the program. Choose your migration format and move on to the next screen.

3 Now run *PCmover* on your old PC and step through the screens. Enter your serial number when you're prompted. This will unlock the program and allow you to complete the migration. If you're using a network for the file transfer you have to identify your new PC or give it a name.

4 Your two computers should now be synced together and are ready to begin the transfer. You'll see a summary of the data that is about to be migrated and the disk space that is required. Make sure your new PC has enough space. When you begin the transfer, you can see its progress on both PCs.

Workshop

John Brandon warns of the challenges of running VoIP on your mobile device

So, VoIP is a miracle system for free or almost free local and long distance phone service, right? And, services like Skype and Vonage will one day replace landline phones and mobile phones? Well, not exactly. With VoIP on your smartphone, there are a few hard lessons to learn. One is that you can't use VoIP at all if you are not connected to the internet. That means if you wander too far off the beaten path, you can forget mobile calling. You'll need to be attached to a wireless hotspot of some sort or, realistically, within range of a GPRS or 3G transceiver.

CRYSTAL CLEAR?

VoIP is a new technology. Don't expect good reception all the time. If your HP Mobile Messenger 6500 is running the Skype client, for example, and you attach to a slow wireless router, you'll hear pops and chirps on the line, and your calls may end abruptly. In terms of free calls, longer Skype calls to non-Skype users will end up costing a few pounds per day, and when anyone calls you on Skype you'll burn through those minutes fast. It's also worth noting that Vonage and Broadvoice – or any VoIP service – only charge a few pence per minute for long distance calls.

The HP Mobile Messenger Pocket PC is a perfect candidate for VoIP calling.

Use your PDA for VoIP calls

John Brandon explores the liberating freedom of a phone with no strings (or wires) attached

Voice over IP works by transmitting and receiving packets of data rather than an analogue sound. All you need is a PC, a microphone and some headphones or speakers, and you can call other PCs with a matching VoIP client installed for free.

Alternatively, you can call conventional landlines or mobile phones, which isn't free but is significantly cheaper than than it would be over your standard phone line. *Skype* is the undisputed king of VoIP at the moment; though it may lack the features of some rivals, it has ease of use and a massive user base on its side, so more people you know are likely to be using it, rather than an alternative service.

FREE PHONE

But we'll be honest; sitting in front of your monitor wearing a dorky headset isn't as comfortable a telephonic experience as it could be. Which is where that PDA you've left gathering dust for months comes in handy; sure, it's a bit bigger than a phone, but it's roughly phone-shaped and has a built-in mic and speaker. Chances are it's got built in wi-fi, too, so you could use it to make VoIP calls from anywhere in the house or from public wireless hotspots. And, if you're using a PDA-phone hybrid such the I-Mate Jam, it's designed specifically for making calls, so you can neatly switch between cripplingly expensive mobile phone provider tarrifs and free as a bird VoIP calls depending on whether you have access to a wireless router or not. It may even be cheaper to use the smartphone's GPRS or 3G

> **"Skype is the undisputed king of VoIP, with a massive user base on its side"**

internet access to make VoIP calls than standard mobile calls, but be sure to check how much your phone provider charges you for data calls before you leap ahead blindly, though. On most contracts you'll be charged by the megabyte, and given that a Skype call uses between 180 and 960KB per minute, you could end up racking up a huge cost. However, if your contract gives you a decent allotment of free data usage per month, it could

Install the Skype client

Get VoIP on your Pocket PC and start calling

1 From the coverdisc or **www.skype.com**, install the regular, desktop PC version of the *Skype* client. It's much easier to create a user account this way, and set up options such as SkypeIn (a phone number for your account) and SkypeOut (allowing calling to mobiles and landlines).

2 Install the Pocket PC *Skype* client the way you normally load software on your device. With *Skype*, it's a simple installer program. You'll get an icon in your programs list that you click any time you want to make a call. Go ahead and click it now to head into the wonderful world of VoIP.

well be that all your technology planets align properly and you could end up making an enormous saving.

DESTINY CALLING

Though *Skype* provides a dedicated Pocket PC version of its client, which we show you how to use below, this unfortunately won't work on all Pocket PC or Windows Mobile devices. Microsoft Smartphones such as Orange's early SPV series are out, because their relatively feeble CPUs simply aren't up to the job – something like the aforementioned I-Mate Jam is as slimline as you can go. If your PDA runs Pocket PC 2003, Windows Mobile 5 or newer, has a 312MHz CPU or better and on-board wi-fi (or an expansion slot into which you could fit a wi-fi card), you're in luck. You'll also need a wireless router (or access to a wireless hotpost) or a wireless card in your desktop PC so that the PDA can connect to the internet.

Finally, you'll need a VoIP client. We've gone with *Skype* for this tutorial, but you'll also find on the disc two alternative services for using VoIP on a Pocket PC PDA – *CounterPath* and *SJPhone*. In each case, you'll need to create an account – usually free for PC (or PDA) to PC calls, but you'll have to cough up a subscription or buy pay-as-you-go credit to call landlines and mobiles. **PCF**

Born to roam
You'll need a wireless net connection or 3G phone.

Delicate digits
Save your fingers by having Skype's client find all of your contacts' accounts.

ON THE DISC

SJPhone
SJPhone is another VoIP client for Pocket PC devices that has a slightly more useable interface than most. Certainly worth a look if you have some kind of *Skype* aversion.
www.sjlabs.com

Skype client for Pocket PC
Skype for Pocket PC uses the wildly popular. *Skype* service; you'll need SkypeIn to place calls to non-*Skype* users, and SkypeOut to receive calls.
www.skype.com

Counter Path for Pocket PC
ConnectPath makes the *X-Pro CE* client for use with the existing VoIP services from companies such as Vonage and Broadvoice. If you use VoIP regularly this may be a good bet.
www.counterpath.com

Speed dialling
The power of the processor in your PDA is crucial. *Skype* won't run on any device that doesn't have a 312Mhz CPU, ruling out some Smartphones.

In association with

CORSAIR

3 Next, enter your *Skype* login name and password. You can also choose to create a new account, but we'd suggest signing up on your PC, as filling in lengthy web forms on a PDA is no-one's idea of a good time. Once done, select the option to sign in automatically; click **OK**.

4 Note that the *Skype* client for Pocket PC mimics the desktop version. So, if you have contacts and have configured SkypeIn and SkypeOut, you'll see those options. Otherwise, you can set up contacts just by entering their *Skype* usernname or searching.

5 Click **No Contacts Online** to search for contacts. It's a cool feature; it searches your e-mail contacts – already located on your PDA – to see if anyone already has a *Skype* account and adds them automatically. Click any contact and start jabbering.

Creating 3D spaces

part 12**3**

Sam Rowlands completes his *REALbasic* photo gallery…

Now that the basics of your virtual gallery are in place, (see last issue) we're going to spend the final part of this tutorial adding some gloss to the project. A pre-built 3D 'room' will be converted to the format that REALbasic understands, then imported. The code will need to be changed to accept this. *REALbasic* uses 3DMF files for 3D work, which are not supported by most 3D rendering apps, so a tool called *RB3D Utility* is required. *RB3D Utility* can open 3DS (*3D Studio*) & OBJ (*LightWave*) files and then convert them to 3DMF (*3D MetaFile*). The second task is to stop the camera from going through the walls; for this the program needs to know where the camera can be positioned and to check before the camera is actually moved. The last task is to add a Progress dialog to the project so that, when images are opened and added to the 3D space, the user of the program gets some visual feedback when its busy, and the end user doesn't think that the program has crashed. **PCF**

Upgrade

A new version of REALbasic is released every 90 days. This means that bugs are fixed quickly, and new features are added regularly. To upgrade REALbasic, visit **realbasic.iworldstore.com/ shop.lasso**

1 To start with, create a new folder and call this folder **Photo Gallery 3D**, then duplicate the project file from last month's tutorial into this new folder. Copy **Room.3DS**, **wall-texture. jpg**, **floor-texture.jpg** and **ceiling-texture.jpg** from the coverdisc into the folder as well.
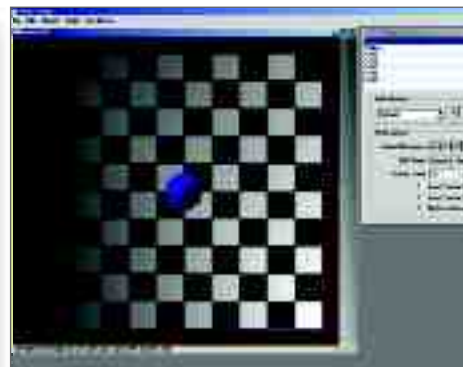
2 Launch RB3D Utility and then open the file **Room.3ds**. Select **Save as 3DMF…** from the file menu and then choose the project folder. This will convert the 3D file you want to import, Room.3ds, into a 3DMF file that *REALbasic* can read and edit in future.

3 Insert the code from Code Section 1, which you'll find on this month's coverdisc, to the open event of the **MainWindow** section, between line five and six of the code. This code will load and append the 3D object room to the display, making it feel more like a real gallery.

4 Next, we need to add two new **Properties** to the Window section of the code: MinXZ(-1) as **Vector3D** and MaxXZ(-1) as **Vector 3D**. These Properties will be used in the next steps to prevent the camera from passing through the walls, and add an air of solidity to the gallery.

Restrain yourself How to stop the viewer passing through walls

1 The next thing we need to do before our virtual gallery can really take shape is insert the code from Code Section 2 (on the coverdisc) to the open event of the **MainWindow**, after the code that was added in Step 3 of the walkthrough above. This code will define the areas that the user can be in the 3D space.

2 The code in the **Keydown** event of the Window also needs to be updated so that, before the camera moves in any direction, our application checks to make sure that the viewpoint is allowed to move to the desired location. Replace the code with the code from Source Code Section 3.

3 Create a new window, call it **ProgressWindow**, and then add a **ProgressBar** and a static text. Define the title of the window as **Photo Gallery 3D** and then StaticText's text to **Please Wait…** Replace the last paragraph in the open event with Code Section 04, and our work here is almost done.

4 Next, you need to replace the code in the **DropObject** event with the code in Source Code Section 5. The new code will take advantage of the new ProgressWindow to show something to the user, while the application is busy importing pictures, or launching them on either launch or dropped in.

Missed a Workshop?

Do you know how to dodge those naughty eBay scammers? Or how to pick up the best kit for your hard earned notes? Or how to fix your rig when it starts belching smoke? If not, then enlightenment is but a step away, and its name is *PCFormat*…

Recently in PCFormat

ISSUE 183 JANUARY 2006

ISSUE 184 FEBRUARY 2006

ISSUE 185 MARCH 2006

Workshops
Embrace Linux with our installation tutorial, design your garden with *Landscaping Photo*, and create the perfect CV with *Resume Builder*.

In the mag
The world's fastest computers, *CrossFire v SLI*, *Path of Neo*, *Prince of Persia: The Two Thrones*, *Peter Jackson's King Kong*, *BrowserBob*, *PhotoPlus 7* and more…

On the DVD
Quake IV, *Civilization IV*, *Harry Potter and the Goblet of Fire* and more…

Workshops
Code your way to a 3D photo browser with *REALbasic*, build a beautiful website, and become a pinball wizard with *Future Pinball*.

In the mag
How to perform technical surgery on your home, the first Core Duo laptop, *Eve Online: Red Moon Rising*, TV card Supertest, *Project Dogwaffle* and more…

On the DVD
TOCA Race Driver 3, *S.W.I.N.E*, *Ski Racing 2006*, *Cold War* and more…

Workshops
Create a 3D scene worthy of a Wordsworth poem with *World Builder 3*, build a *Battlefield 2* map, and warble with *Singing Coach*.

In the mag
Guide to keeping yourself secure online and avoiding ID theft, the ATI X1900XTX, *Stubbs the Zombie*, motherboard Supertest, Track IR Pro 4 and more...

On the DVD
Crashday, *The Movies*, *TubeTwist*, *Timeshift*, *Ankh* and more…

PCFormat back issues **£6.49** each. Please add postage & packing: £2 UK, £3 Europe, £4 rest of world per issue

Luis Villazon
SCORN IS HIS MIDDLE NAME

Ask Luis...
ALL YOUR PC QUESTIONS ANSWERED

Problem solved

Like the majestic and perenially elusive blue whale, Luis Villazon patiently sieves through thousands of your letters in search of the odd one that makes a bit of sense
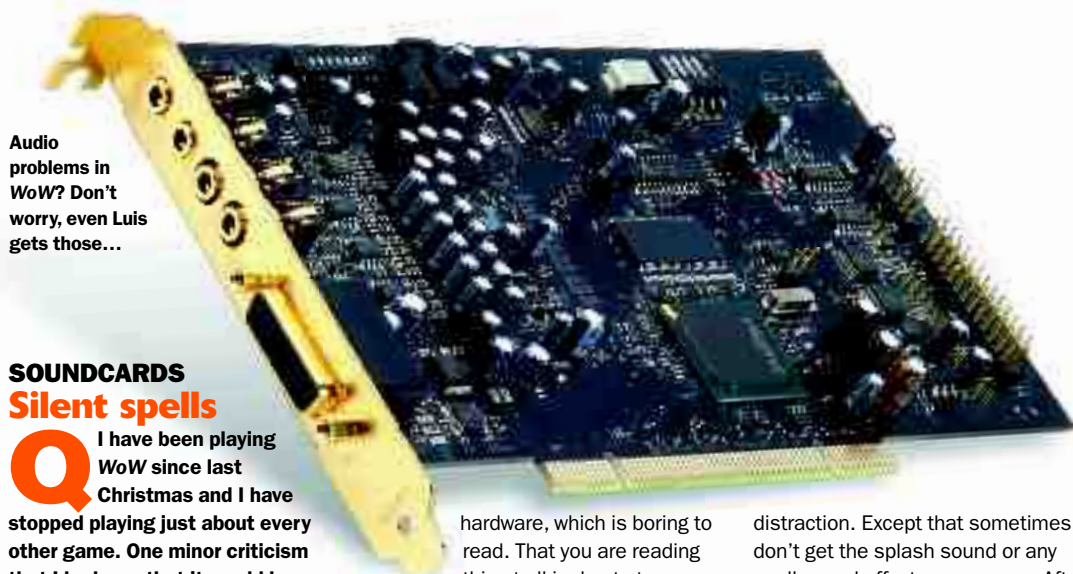
Audio problems in *WoW*? Don't worry, even Luis gets those…

SOUNDCARDS
Silent spells

Q I have been playing *WoW* since last Christmas and I have stopped playing just about every other game. One minor criticism that I had was that it would be better if the spells made a sound when you cast them, instead of just having a graphical effect. Then, the other day I discovered that they do! Suddenly, as well as the in-game music and all the ambient sound effects, my spells were making impressive swooshes and pings! And then, just as suddenly they stopped again. Now I find I can't enjoy the game without all the effects. What is causing this and can it be fixed? I have a 3.2GHz P4 with 1GB RAM and a SoundBlaster Audigy 2 ZS. I didn't change any settings, either to make the sound start or to make it stop again.

IAN GASPAR
ihg2629@hotmail.com

A I don't generally like questions of the form "I have sucky graphics/sound/framerate in game x" because the answer is nearly always to update the driver or upgrade the hardware, which is boring to read. That you are reading this at all is due to two things: 1. I am myself hopelessly addicted to *WoW* (but I'm not telling you what server I play on – I get ganked enough as it is) and 2. I have had this exact same technical problem.

First some background. I have tailoring and enchanting as my two professions, which as anyone will tell you are the two most expensive professions to level up. So to make money, I go fishing. You can make quite a bit of money selling the rarer fish, if you know where to catch them, but it's quite slow and fairly boring to do – you just stand still watching your fishing float, occasionally right-clicking when a fish is hooked. So, I often run *WoW* on one PC while I work on the other (I have two machines side-by-side on my desk). If I turn all the music and ambient effects off, I am left with just the splash sound to alert me to a fish and I can hook myself ten gold in a morning with minimal distraction. Except that sometimes, I don't get the splash sound or any spell sound effects, as you say. After much fiddling around, I have traced this to the config.wtf file in the Program Files\World of Warcraft\WTF folder. You need to have a line there that says:

SET SoundOutputSystem "1"

This forces *WoW* to use the Windows Multimedia sound driver. If you look in the Logs\Sound.Log file you'll be able to see what setting it is using. Normally, this is -1, which is auto-select. My limited tests seem to suggest that auto-select always picks Direct Sound on my system (I also have an Audigy 2 ZS) at the moment but my hunch is that it is the autoselect behaviour that is changing, possibly as a result of the automatically downloaded game patches. Anyway, the trick, I think, is to find the value of SoundOutputSystem that works on your PC and force this, rather than rely on the auto select algorithm. For completeness, here is the full list of possible values:

-1 = Auto select
1 = Windows Multimedia
2 = Direct Sound
3 = Aureal3D
4 = Open Sound System
5 = Enlightment Sound Daemon
6 = Alsa
7 = No Sound
8 = Xbox
9 = Playstation 2
10 = Mac Sound Manager
11 = Gamecube

NETWORKING
Wireless dropouts

Q I have run a wireless network at home for the last six months or so without any problems. Recently I decided to enable 64-bit WEP and now it seems that my wireless connection will drop out every 15 minutes or so. I can fix it by right-clicking the tray icon and selecting "repair" but this is only a temporary fix and 15 minutes later it drops again. Is there an alternative to simply disabling the wireless encryption protocol?
NO NAME SUPPLIED

A This is a problem that has often been reported on Linksys routers and access points. The solution seems to be to increase the "beacon interval" value from 50 to 100. To do this, you'll need to open the configuration page served by each of your wireless devices. Either point your browser at the IP address of that device (192.168.1.1, say) or physically connect to each one with a network cable and run the configuration program on the driver disc. Beacon Interval is usually located on one of the advanced pages. Don't ask me why this works, nor blame me if it

doesn't. I will however, happily take the credit if you see any improvement in the stability of your wireless connection, of course. But then, you knew that already.

OS GLITCHES
Mystery ding

Q I have a PC running XP Home, and for the most part it runs pretty well. However, I notice that whenever I log off or shut down, the system makes an "error noise" (I think the file is Ding.wav) just before actually logging off. This suggests to me there may be something wrong with the system I am not yet aware of.

Having studied the event viewer, I've noticed the following message recorded at the time of logging off, under UPHClean in the Application tab:

"The following handles in user profile hive MESH\Mr. N.V Westenholz (S-1-5-21-584892708-2348422032-1598034445-1006) have been remapped because they were preventing the profile from unloading successfully:
svchost.exe (1272)
HKCU (0x28c)

I have little idea what this means (although I am aware of the role of the User Profile Hive Cleanup Service). I would be very grateful for a smidgeon of your monthly expertise to enlighten me.
NICHOLAS VON WESTENHOLZ
nvonw@tiscali.co.uk

A Just a smidgen, then. Turn off the Zero Wireless Configuration Service and the Remote Registry Service. For anyone else out there who isn't aware of the role of the User Profile Hive Cleanup Service, please

proceed to http:tinyurl.com/42kj6 without delay.

MOTHERBOARDS
Unstoppable Windows

Q My PC won't shut down properly, for some strange reason. When I try to switch it off, it behaves normally and switches off, then all of a sudden it starts up again without me touching the power button. Then a screen appears saying that Windows has experienced an error and offers to report it for me. My PC is on Windows XP Pro with all the latest updates running on an Athlon 3500+ with 2GB RAM.
GARY
angelblade25@hotmail.com

A Shutdown glitches in XP can nearly always be narrowed down to one of two possible causes: something to do with the hardware or something to do with the software. Less commonly, they can also be caused by something to do with something else entirely.

This is because the default behaviour for XP, when presented with a system failure, is to reboot. It's not that you are more likely to get a system failure when the OS is shutting down than when it is running. It's just that, as services get unloaded during shutdown, the range of diagnostic possibilities that XP has available gets much narrower. Pretty much anything that compromises the OS that late in the shutdown triggers a reboot because this is the only way Windows has of telling you that something is wrong. It's kind of like coming round from the anaesthetic to find yourself still on the operating table and completely paralysed. All you can do is hold your breath and hope that the surgeon draws the correct inference from your falling blood oxygen level. (Note to anyone shortly undergoing surgery: I have no idea if this would work – they might just crack your chest open and stick defibrillator paddles on your heart or something. Let me know how it goes.)

Assuming you survive your triple bypass, the only way you are going to fix your PC is by embarking on that gruelling troubleshoot-athon that is listed as step one in all diagnostic flowcharts. Download the latest drivers for all your hardware, remove all non-essential expansion cards, disable all applications that run at startup, turn off your virus checker

---

FAQ
Optimus Mini

Not a baby transformer.

What is it?
Three 96x96 pixel colour screens that can also be clicked like a mini-keyboard.

What use is that?
You plug it into your USB port and use it as sort of off-screen extension of your Windows system tray. Imagine a button that shows how many unread mail messages you have and opens Outlook Express when you click it.

Can I code it myself?
You might have to. Initial software support is sketchy, but it will come with an image editor and simple macro tools.

What's the tech?
Organic LED. This offers good colour and brightness and has a 5,000 hour operating life.

5,000 hours? That's 200 days!
208, actually, but only if the displays are running 24/7. Power-saving software will cut in to extend display life.

Yeah, to 600 days…
Well, this is really only a stop-gap until the Optimus keyboard, with a 32x32 display on every key, arrives. By then, OLEDs should be more reliable.

When will that be?
The designer claims the full Optimus will ship late this year. However at the end of January, he still didn't have a working production sample. Optimus Mini should ship late this year.

How much will it cost?
$100, which might translate to either £65 or £100.

Read more at:
artlebedev.com/portfolio/optimus-mini

▶ and third-party firewall software, circle the motherboard three times widdershins, while reciting the names of all Microsoft's development staff, yadda yadda yadda, and so on.

SOLDERING
New cable

Q I bet you don't get many letters from people about hardware problems that they have already diagnosed. This could be a first! I have a Sony Vaio laptop and have traced a power problem to a micro-cable that runs between the main board and a small board behind the power switch. This supplies the operating voltage from either battery or mains to the on/off switch.

I would just replace it, of course, but it's not that easy. First, I have to identify the type of cable that has no markings. Is it a standard cable or is it special to Sony? I have searched various sites on the net, even eBay to source any type of micro cable or any information. I have found no similar cables for sale anywhere, even though this type of cable, I hazard to guess, is commonplace inside laptops. Is my last resort to get my laptop repaired by a Laptop Specialist Repair Shop and most probably get overcharged for simply replacing a cable?

GARY LIVETT
GLiv688@aol.com

A Not at all. I'll happily save you the trouble by overcharging you myself. Send me £50, care of *PCFormat*, and I will send you a compatible cable by return of post. This isn't just a cable. It is a generously long, 100% copper, single-core, double-strand M&S cable with PVC insulation and pre-stripped ends.

Oh, all right then, it is just a cable. Cable is cable, you see. The only complicated thing about a cable is the plug on the end. We computer people are mostly so lazy that we insist on our PCs connecting together like LEGO with every female socket having a corresponding shaped male plug. I like laziness – it's really just an extreme version of efficiency. But we mustn't allow laziness to morph unnoticed into it's darker cousin, dependency. If you have the right cable or can get hold of it easily, fine, go ahead and use that. But if that isn't possible go ahead and improvise. Something conductive surrounded by something insulating, that's all you need. If you can reuse the connectors, so much the better but even if you can't, it should be perfectly possible to solder a short length of ordinary single-strand, insulated copper wire directly on to the pins on the

description for this code is simply "Repeating (endless loop)" which isn't as conclusive as I would like. Nevertheless, if this is your code, it means that there is a problem with the RAM, and this is where I would start looking in any case. If you want a maxim to live by, you could do worse than "taking out the last thing you stuck in and then stick it back in again." This tactic has worked for me in more walks of life than I currently care to enumerate.

If removing and reseating the RAM doesn't help, you should next check that you do in fact have the correct sort of RAM for your new motherboard. The A7S8X-MX takes 184-pin DDR DIMMs without ECC. Since you don't say what the kind of RAM you have nor what your old motherboard was, I can't tell if this is the problem, but if you don't know how to identify RAM, you can visit **www.crucial.com** and enter the details of your old motherboard into their memory configuration tool. Since the old system presumably booted OK, you can be fairly sure that what you have is whatever

Windows Malicious Software Removal Tool
It's not a virus checker but it might prove useful

1 **Low-hanging fruit**
The Windows Malicious Software Removal Tool (WMSRT) is a virus and Trojan detection utility. It doesn't find every piece of malware, nor does it claim to, but it catches 50 or so of the most prevalent ones. It integrates directly with Windows Update and most importantly it is free.

2 **Installing**
Download the tool from the Microsoft Download Center (the shortcut is **tinyurl.com/3vvsc**). Once it has downloaded, you can unpack the utility and run it. Nothing is added to your Start menu by this process because Microsoft wants you to download the latest version every time you run it.
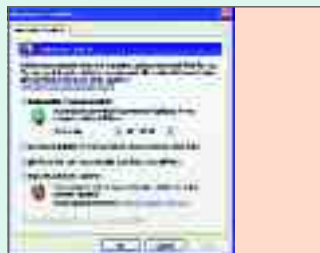
3 **Test results**
After the utility has run, it will show you a list of all the malware it has scanned for and whether it was found on your system or not. The utility can remove all the programs it scans for so either way, your system should be clean as a whistle by the end of the scan.

4 **Updating**
A new version of the utility is made available at the Microsoft Download Center on the second Tuesday of every month. If you have Windows Update set for automatic updates, this will now download and run automatically at the time specified in your schedule once a new version is up.

"I do, in fact, periodically build myself something fairly close to the ultimate PC"

motherboard. This isn't even data cable, so you don't even care too much about RF interference. I've done this with speaker cable, I've done it with IDE cable, I've even done it with AC power cable (which is quite dangerous and you probably shouldn't do). But that's ok, because you don't have to. All you have to do is get 5V DC from spot on the motherboard to another.

MOTHERBOARDS
Make the beeping stop, please

Q I have just replaced the mobo in my daughter's PC and when I switch on the power I just get a single long beep, repeated every three seconds. The motherboard in question is an ASUS A7S8X-MX with 256MB RAM and an AMD Duron chip originally fitted by the retailer.

N M LEWIS
ds.nml@virgin.net

A The A7S8X-MX uses an Award BIOS and there is only one valid POST beep code that is listed as continuously repeating. Unfortunately, the

Crucial tells you is compatible with that motherboard. If this isn't 184-pin, non-ECC DDR then you'll need to replace it for RAM that is.

And once again, let me conclude this sermon with my usual warning against the perils of motherboard upgrades. Truly, it is never worth it. If your system is old enough to benefit from an upgrade, you'll need to replace so much else that you may as well buy a new system. Replacing a blown motherboard on a new system is one thing. Upgrading to give yourself an on-board card reader on your 10-year old system is like putting an EJ200 turbo fan jet engine in a Sopwith Camel.

SELF-BUILD
The ultimate PC

Q Quick question: if you could build the ultimate PC (and money was no object), what would it be?

COBUS KNOETZE
jmknoetze@gmail.com

A I do in fact periodically build something fairly close to the ultimate PC. But the older I get, the more important

reliability becomes to my assessment of what an ultimate PC actually is. In any case, my computing needs, in terms of raw horsepower, are comparatively modest. Probably the most demanding thing I do is play *World of Warcraft*. I have a separate computer to do this; *WoW* is the only application installed on it. Provided that I can run *WoW* at 1,280x1,024 with all the detail turned up, I'm happy. At the moment, this only needs a 3.2GHz P4 on an Intel 915GAG motherboard with a 256MB Radeon X600 Pro. At the time of writing, *WoW* is on version 1.4. When version 1.10 brings dynamic weather effects in a month or so, I will probably need a touch more than this, so I will probably replace the graphics card (almost certainly with an X800 GTO) and cascade the old one down to my 'crash-test dummy' PC that gets used to test all the dangerous stuff.

If I need more than that, I'll buy a whole new PC. I'd much rather buy a new mid-range PC every year for the rest of my life than the baddest über-rig now and then nothing for another five years. This is one of the reasons why I have so many PCs littering the house.

INSTALLING WOES
Rejected CD

Q I have just formatted my hard disk and now I find that I cannot reinstall Windows 98 back on the hard disk. The CD drive rejects Windows 98, saying I'm using the wrong disk. So where am I going wrong?
R BROOMFIELD
rbroomfield@tiscali.co.uk

A It isn't rejecting the CD; it isn't even checking it because your BIOS isn't set

to boot from the CD. This leaves it checking the formatted hard disk and the empty floppy drive. Since neither has a valid boot partition, the bootstrap loaders returns 'Invalid system disk' and halts. If your BIOS can boot from CD (by no means guaranteed on a Windows 98-vintage machine) you need to reboot, press DEL to enter the BIOS setup program and set the CD drive as a boot device. Otherwise, you should boot from a floppy, preferably the Windows 98 setup discs.

USB PROBLEMS
Upgrading to 2.0

Q I have a computer that has two USB ports. How do I make them USB 2?
PETER MCGILLION
peter.mcgillion@ntlworld.com

A You can't with anything less than a motherboard upgrade. Which, on a machine old enough to still have USB 1, isn't something I'd advise. A £250 entry level system from www.misco.co.uk or www.dabs.com would give you USB 2.0, more horsepower and less installation grief. When you consider that you will need to upgrade RAM, CPU and possibly even your power supply and video card as well, a new system will also probably be cheaper.

OS TWEAKS
Intrusive interface

Q I'm running into a "do you want to turn on autocomplete" question from Internet Explorer on a far too frequent basis. Since you've been around answering complicated questions since the times when a floppy drive was still the thing and hitting upon Window obstructions just caused injury to the body, your

wealth of knowledge must be able to help me out. Were it the done thing, I would slip a tenner into my letter's envelope to further my case, but then this is an email and by lack of Windows existence, I would not have this question, so there's no real loss for you in it.
GERARD ELDERS
gerard.elders@tiscali.nl

A No loss for me? To think that all this time I have been missing out on a steady stream of dirty money and bribes, simply for want of a PayPal account! I really need to get myself registered as a charity or something.

It's a very long time since I kicked the Autocomplete wizard out of my life. My threshold of tolerance for dialogues that ask me the same question until they get the answer they want is low, even by my own preternaturally intolerant standards.

Here's what you do. First, open up regedit and navigate over to HKEY_CURRENT_USER\ Software\ Policies\ Microsoft\ Internet Explorer\ Control Panel. You then need to add a new DWORD value called FormSuggest and set it to 1. If it is already there but set to 0, just edit it back to 1. If it is already there and set to 1, well, then I am obviously wrong, and I will be forced to refund you all the money you sent me. Oh, that's right. You didn't. Whatever was I thinking?

STATING THE OBVIOUS
He's right, and you know he is

Q My PC sucks! You rock!
MORNE BEZUIDENHOUT
Email withheld

A I really couldn't have put it better myself. Nice of you to say so. **PCF**

Luis and Ned

SO, FORGIVE ME, BUT IF YOU FIRE THE WIRELESS SIGNAL DOWN COPPER PIPES TO STOP ANYONE EAVESDROPPING ON THE STRAY SIGNAL, HOW IS THAT ANY DIFFERENT FROM JUST LAYING AN ORDINARY CABLE NETWORK?

Answers 1b, 2d, 3b, 4d, 5b

Words Luis Villazon **Pictures** Mark Mitchell

state of the art #11

THE LATEST TECHNOLOGY EXPLAINED

PRODUCTION LINE
Elpida is one of the companies already producing XDR chips.

Rambus Mk II

RDRAM may be history, but the company behind it is alive and kicking. James Morris explains how the long-awaited successor to Rambus will work

Back in the latter half of the 1990s, the jury was out what the next generation of PC memory would be. EDO DRAM had been replaced by SDRAM, which increased in speed from 66MHz to 133MHz over its lifetime. But SDRAM had reached its limits, and there were two contenders to succeed it – the DDR we still use today, and the infamous Rambus. Whilst DDR doubled its performance over SDRAM by passing data twice per clock cycle over its 64-bit bus, RDRAM used a much narrower 16-bit bus but operated at 800MHz, in its original incarnation.

On paper, Rambus offered a bigger performance increase over SDRAM than DDR. The first PC800 RDRAM was capable of 1,600MB/sec, whereas PC133 SDRAM could only muster 1,066MB/sec. In dual-channel mode using Intel's i850 chipset, RDRAM was further ahead at 3,200MB/sec. Even PC2100 DDR, in comparison, only offered two thirds the bandwidth. But Rambus had its drawbacks. It was widely accused of having greater latency than SDRAM or DDR SDRAM, although reports differ on this. Its more important drawback, however, was its price. Each RDRAM module incorporated its own control circuitry, making it more expensive to manufacture – and Rambus's high licensing fees didn't help either. So Rambus never made it to the mainstream, remaining a niche memory format for premium Intel platforms.

BETTER BANDWIDTH
However, high bandwidth memory is becoming increasingly vital. GDDR3 has been available for a few years, and is used as unified memory on the Xbox 360. DDR3, designed for general system use, won't be arriving until 2007. So the opportunity is there for a competitor – and Rambus is stepping into the fray. Its latest XDR memory technology has been chosen for Sony's PlayStation 3, and could also be used on desktop PCs.

Rambus XDR is a big step forward from the original RDRAM. For a start, it operates at a much higher frequency. The underlying memory cells run at a relatively standard 400MHz, although faster iterations are planned. But the cells send more than one bit of data per clock cycle, rather like a quad-pumped Pentium 4 FSB or AGP 8x. This is also similar to the way DDR can transfer two bits of data per clock, and DDR2 transmits four. However, using Octal Data Rate, XDR transfers eight bits of data per clock for an effective 3.2GHz operating frequency. These 3.2GHz chips are then attached to the

How XDR works
DDR-beating memory technology explained

SDRAM

CORE FREQUENCY = 100MHz

DDR I

CORE FREQUENCY = 100MHz

DDR II

CORE FREQUENCY = 100MHz
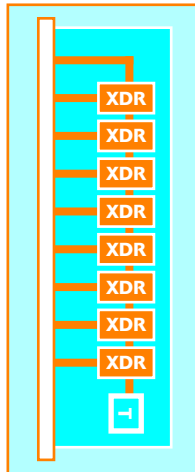
ODR

SYSTEM FREQUENCY = 100MHz

HIGH-SPEED GAMING
The Playstation 3 has 25.6GB/sec of bandwidth between its Cell processor and main system memory.

"Rambus XDR is a big step forward from the original RDRAM"

RAMBUS IN ACTION
The PlayStation 3's XDR memory controller on the left and the FlexIO bus on the right – both Rambus technology.

LINKED MODULES
Multiple 3.2GHz chips can run in parallel, multiplying the effective interface width.

CLOCK FREQUENCY = 100MHz

DATA FREQUENCY = 100MHz

CLOCK FREQUENCY = 100MHz

DATA FREQUENCY = 200MHz

CLOCK FREQUENCY = 200MHz

DATA FREQUENCY = 400MHz

CLOCK FREQUENCY = 400MHz

DATA FREQUENCY = 3,200MHz

memory interface using a 16-bit bus, and the width can also be programmed to be one, two, four or eight bits wide.

The clever thing is that these 16-bit buses can in turn be combined to make wider 64-bit, 128-bit or even 512-bit memory paths. So while a single 16-bit channel of XDR offers 6.4GB/sec, Sony's PlayStation is currently believed to run four in parallel, to make a 64-bit memory interface with a throughput of 25.6GB/sec. The initial 232-pin XDIMM package aimed at mainstream PCs will have a 32-bit interface, so a single stick of this memory will offer 12.8GB/sec.

Putting this in context, PC3200 DDR runs at 400MHz over a 64-bit bus, so only offers 6.4GB/s even in dual-channel mode. Two channels of PC5400 DDR2 running at 667MHz are capable of 10.8GB/sec. Only GDDR3 implementations in graphics cards exceed the performance – the 1.55GHz memory on a stock ATI Radeon X1900XTX, for example, can manage 49.6GB/sec. However, XDR on the same 256-bit interface would be capable of 102.4Gb/sec – more than twice the throughput. So in raw data transfer, XDR is in a different league to any other memory technology. The latency issue has been solved with XDR too. Where DDR2 has read-write latencies of around 66ns, and GDDR3 around 68ns, XDR takes 52.5ns to read data and just 42.5ns to write it.

IMPROVED PERFORMANCE
Some other clever technologies go alongside XDR as well. Differential Rambus Signalling Levels (DRSL) works in a similar way to low voltage differential (LVD) SCSI. Instead of using the difference between 0V and a higher voltage, this compares two signalling lines, so is able to make out 0s and 1s from a 200mV swing. The end result is improved performance at the same time as lower power. This is the reason why nominally 3.2GHz XDR can still operate with a 1.8V supply, similar to DDR2.

As well as the XDR memory controller, Rambus has introduced its own IO bus called FlexIO, which will also be integrated into Sony's Cell processor. This has similar applications to HyperTransport – only it's much faster. It has a core clock of 400-800MHz, and can transfer more than one bit per cycle in a similar fashion to XDR's Octal Data Rate, but in this case up to 10 bits at a time. The end result is an effective 8GHz ceiling capable of a raw 76.8GB/sec. On the PlayStation 3, the RSX graphics processor (developed by Nvidia) can use the FlexIO interface to access XDR system memory directly, in a similar fashion to NVIDIA's TurboCache or ATI's HyperMemory.

Rambus XDR is now in production. Samsung announced that it started making 256MB modules in January, moving to 512MB modules by the middle of 2006. Toshiba and Elpida were sampling chips in early 2005 as well. The 3.2GHz version of XDR is just the beginning, too. A 4GHz version will also be available, with 4.8GHz, 6.4GHz and 8GHz to follow. Beyond that, Rambus has already fleshed out some details of XDR's successor, XDR2. Not only will this push beyond 8GHz, but will also include a new innovation called Micro-threading. This will allow data to be accessed in smaller chunks at more frequent intervals, which will increase performance with certain applications like games or 3D visualisation.

XDR is already garnering interest in consumer electronics devices, and has been licensed to IBM, Sony, Toshiba, and Panasonic, although none of them have publicly announced what for other than Sony's PlayStation 3. But only time will tell if Rambus XDR will find greater favour than RDRAM – and become the mainstream memory format for the next generation of PCs. **PCF**

NEXT MONTH
HOLOGRAPHIC MEMORY
HARD DRIVES THAT READ DATA IN THREE DIMENSIONS ARE NO LONGER SCIENCE FICTION

Digimate 15-inch Widescreen
£99
p127

ViewSonic VA2012w
£349
p127

Samsung SM730MW

£361
p128

Philips 200W6
£363
p128

BenQ FP202W
£381
p129

Acer AL2032 WM
£474
p129

Sony MFM-HT205
£619
p130

Eizo FlexScan S2110W
£720
p130

LG M2343A,
£809
p131
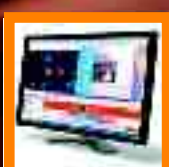
Dell 3007WFP
£1,471
p131

Widescreen wonders

One size doesn't fit all when it comes to choosing a widescreen monitor. Matthew Richards broadens his horizons

New tech

New tech always has silly price tags, but LCD computer monitors are now so firmly established that most manufacturers have dropped clunky, old-fashioned CRTs from their product ranges altogether, and there are now some frankly ridiculous LCD bargains to be had. The same thing is beginning to happen in the TV market. As widescreen LCD TVs become increasingly popular, their prices continue to drop, on an almost weekly basis. Put these two technologies together, and you should expect get hold of some seriously exciting kit without breaking the bank.

One of the most natural environments of the widescreen PC/TV monitor is the living room, where it can become the perfect focal point of any Windows XP Media Center. The widescreen aspect ratio is ideal for DVD movies and compatible TV broadcasts, while reasonably large screen sizes make for easy viewing from the sofa. However, to limit widescreen computer monitors to Media Center applications would be to miss a trick.

As you'll soon have noticed if you use a widescreen laptop, the extra display width is a real bonus when it comes to multi-tasking. There's a lot to be said for not having to shrink web pages down until information starts dropping off the edge, while being able to run a spreadsheet or word processor document on the screen simultaneously, side by side. The widescreen format is also a boost for viewing digital photos, especially from D-SLR cameras, which tend to have a 3:2 rather than the more traditional 4:3 aspect ratio you might expect. In the

"When it comes to viewing DVDs direct from your PC, a widescreen really fits the bill"

darkroom, wider screens also give you space for tool palettes at the side of the photo-viewing pane, without infringing on your picture space. And when it comes to viewing DVD movies direct from your PC, a widescreen monitor really does fit the bill.

ASPECTS OF SUCCESS
If you're old enough, and with a good enough memory, you'll remember the heady days of 'high resolution' viewing, when the VGA monitor ushered in a giddy 640x480 pixels of display array. The wow factor didn't last long, and soon we were up to 800x600 pixels, swiftly followed by 1,024x768 displays. However, all three of these shared the same aspect ratio of 'four thirds' or 4:3, based on conventional TV screen specifications. By far the most popular options of choice, in today's LCD monitor

market, are 17-inch and 19-inch displays. Both of these feature an identical resolution of 1,280x1,024, which is slightly narrower than conventional monitors, with an aspect ratio of 5:4.

For movie viewing, digital photo editing and even for general computing, 17-inch and 19-inch LCDs really offer a small step in the wrong direction. This clears the way for the latest breed of widescreen monitors, which generally offer a more generous picture girth of around 16:10. However, there's a catch, in terms of vertical resolution abilities. For example, 15-inch and 17-inch widescreen monitors typically only offer a vertical resolution of 720 and 768 pixels respectively and it's not until you get to 20-inch widescreen models that you start to see a more healthy vertical resolution of 1,050 pixels.

BIGGER IS BETTER?
Larger widescreen monitors offer less physical height in their displays than a standard 19-inch LCD, the actual screen height being more akin to a 17-inch screen. Crucially, however, the vertical resolution typically of 1,050 pixels is slightly higher than the 1,024 pixels offered by regular 17-inch and 19-inch LCD screens, enabling you to fit more on the screen in real terms, while there's naturally more width to play with.

Pixel counts generally rise with screen size but there are a few exceptions to the rule. For example, whereas most 20-inch widescreen monitors have a native

resolution of 1,680x1,050 pixels, the LG M2343A on test offers a larger, 23-inch screen size but with a lower 1,366x768 pixel native resolution. Bridging the gap between TV and PC, this model, like the Samsung SM730MW and Sony MFM-HT205, also featured in our round-up, has a built-in TV tuner, wireless remote control and all the other associated televisual trappings to enable a genuinely 'multi-function' display. However, even if you're after a 'one screen for all uses' display, you needn't let a built-in TV tuner rule your decision making - just check out our 'As seen on TV' boxout.

One drawback with bigger screens that don't offer bigger, or even equal, resolutions compared with smaller screens, is that the dot pitch, by definition, has to be bigger. With a bigger spacing between the pixels, you can, quite literally, see how the monitor is joining the dots to make up the picture. So, monitors with bigger screen sizes and relatively low resolutions are best reserved for the living room, where you're not going to be working up close to the screen. A notable exception is the mighty Dell 3007WFP. This 30-inch widescreen monitor is not only the largest (and most expensive) monitor in our group, but also offers the highest native resolution, at a whopping 2,560x1,600 pixels, if your graphics card can handle it. See the final review for details. In the meantime, let's kick off with a little something we've dug up from the bargain basement. **PCF**

HOW WE TESTED
We subjected each of the monitors to a barrage of fiercely demanding tests, designed to reveal any weakness
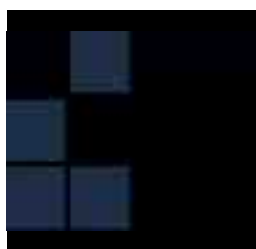
Auto tuning
We tested with both analogue and digital feeds, where compatible, driven from a high-end ATi Radeon X1900 XTX graphics card. Each screen was given over 30 minutes to reach operating temperature. The auto-tune function was then tested for its ability to produce optimum alignment, and subsequent adjustments were carried out manually, if required.
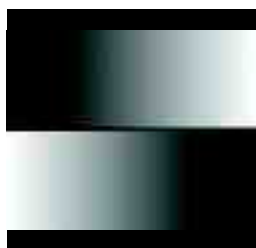
Tonal separation
For calibrating the monitors, we used a program called *DisplayMate* for Windows, which you can download at **www. displaymate.com**, for around £35. First we adjusted the brightness and contrast for optimum black and white levels, before using a 256-step greyscale chart to check the ability to display separation between as many steps as possible.

Colour rendition
Accurate colour rendition is most crucial for digital photo and video editing. We tested the colour performance at each LCD's 6500K colour temperature setting, as well as in sRGB colour mode, where available, comparing each screen with a professional monitor, calibrated using a Pantone ColorVision Spyder 2 (available from **www.colourtools.co.uk** for £140)

Picture quality
A wide range of charts from *DiplayMate* was used to check each monitor's accuracy and performance, in every area of picture quality. We also used fast-paced sequences from games and DVD movies to test for fast response times, checking for fluid motion. For monitors with built-in TV tuners, quality for broadcast programming was checked.

As seen on TV
No built-in TV tuner? Try a bit on the side instead

Considering how well the widescreen format of all the monitors on test lends itself to TV viewing, particularly digital broadcasts, it's a little surprising that only three of them have a built-in TV tuner, namely the Samsung, Sony and LG

models. However, you needn't let a little thing like that limit your buying decisions too much. We picked up the extremely convenient Hauppauge WinTV Nova-T USB2 gizmo online for £60, from www. morecomputers.co.uk, and

it's proved to be a bit of a televisual bargain.

Conveniently connecting to a spare USB 2.0 port, this external tuner receives digital terrestrial TV, through any compatible aerial, and fires the growing range of Freeview digital channels through your PC and onto your monitor. Our test sample took less than five minutes to set up, enabling digital radio reception (though not DAB) as well as digital TV.

One of the main advantages of the WinTV box over monitors with built-in tuners is that you also get comprehensive supporting software, enabling you not only to plan your entire TV viewing schedule, but also to utilise your hard drive as a TV recording solution. This means you can record your favourite programmes as well as freezing live television. The kit comes complete with wireless remote control.

Hauppauge's USB 2.0 digital terrestrial tuner is great for viewing and recording programmes on your PC, complete with live TV pausing.

Digimate 15-inch Widescreen

Price £99 **Web** www.digimate.co.uk

While most widescreen monitors command three-figure or even four-figure pay-offs, this one comes in on the Scroogier side of £100. Like its price tag, the screen itself is quite diminutive at 15.4 inches on the diagonal – think widescreen laptop LCD in a desktop case and you have the idea.

Neat design touches include semi-see-through blue plastic bevel and a stand that offers both tilt and height adjustments, in a kind of retro, angle-poise style with steel counterbalance spring. There's also the added flourish of a blue neon lamp within the stand spring for a bit of extra flash, although it's not the most solid monitor here, and we encountered problems with the screen wobbling around a bit on the desk as we were typing.

In spite of meagre-looking maximum brightness specs, our review sample provided reasonable brightness and contrast levels for use in even a brightly lit room, while the display is pleasantly

DETAIL

Screen size 15.4-inch

Native resolution 1,280x720 pixels

Contrast 400:1

Brightness 220 cd/m²

Response time 25ms

Viewing angles (H/V) 120°/140°

Built-in tuner No

Speakers Yes

sharp at its native 1,280x720 pixel resolution. Colour temperature options include 9300K and 6500K settings as well as a customisable 'User' setting. However, while all the other monitors on test offer full 24-bit colour, the Digimate only has only an 18-bit colour depth. This translates to 262,000 colours instead of the usual 16.7 million, but you can still drive the monitor in regular 32-bit colour mode from your graphics cards and you have to look very closely to see any occasional banding effects caused by the reduced colour depth.

Other features lacking from the monitor include a VESA wall mount option and a digital DVI input, although there are a tiny pair of speakers built in. For overall picture quality, the Digimate can't compete with any of the other monitors in the group but, if you just want widescreen viewing on the cheap, it's still probably worth a look.

60% **PCF says...** "Widescreen minus the space requirements, or most of the outlay."

ViewSonic VA2012w

Price £349 **Web** www.viewsoniceurope.com/uk

The ViewSonic is the cheapest 20-inch monitor in the group, but nevertheless has a good standard of build quality and some neat finishing touches, like its chrome-effect buttons and an embossed logo. The spec list is pretty solid as well, if not exactly

dazzling, offering good value for money, on paper at least.,

Our review sample auto-adjusted itself to a practically perfect set-up on first switch on, although we did get occasional and very slight interference patterns with our most demanding, high frequency test charts. Still, the display was rock solid in normal use. Brightness and contrast were reasonably good in their default, 50 per cent settings although tonal separation was a bit poor, with greyscale steps near both the black and white ends of the scale tending to merge into one another. Manual tweaking of brightness and contrast adjustments failed to cure this.

In the past, we've seen some ViewSonic monitors with decidedly dodgy colour rendition but the accuracy of the VA2012w proved very good, especially at its

DETAIL

Screen size 20.1-inch

Native resolution 1,680x1,050 pixels

Contrast 600:1

Brightness 300 cd/m²

Response time 8ms

Viewing angles (H/V) 140°/125°

Built-in tuner No

Speakers Yes

6500K setting. You also get 9300K, 5400K and 'User Colour' options, as well as an sRGB setting, although use of the latter made the picture artificially bright on our review sample. Since sRGB locks out the brightness and contrast adjustments, you're better off sticking to 6500K and adjusting these manually for the most accurate picture.

With a response time of 8ms, the ViewSonic is one of the faster monitors in the group and, in our tests, it had no trouble keeping up with the fastest-paced DVD movie and games sequences we could throw at it. By contrast, the less said about the typically tinny built-in speakers, the better, although they're just about up to the task of announcing new emails as they drop into your inbox. Overall, though, the ViewSonic is pleasing at the price.

75% **PCF says...** "Good picture quality and finish for a (relatively) reasonable price."

Samsung SM730MW

Price £361 **Web** www.samsung.com/uk

Samsung has a reputation for producing good quality TV and monitor screens at relatively low costs and, in keeping with tradition, the SM730MW is the cheapest monitor in the group to feature a built-in tuner for both TV and FM radio broadcasts. For this, two sockets are provided for both a TV aerial and an FM antenna. The package includes a natty wireless remote control unit, as well as a built-in 7-in-1 memory card reader, which you can use for viewing digital photos and video clips onscreen, or for listening to MP3 music tracks through the above average built-in speakers.

Around the back, the Samsung features a wide range of connection options, including D-Sub and DVI-D basics for analogue and digital PC video output, as well as both component video and S-video channels. All three have their own stereo audio inputs, so the audio switches automatically with the video source, and there's also a SCART socket for added versatility. All menu

controls, including advanced options for PiP (Picture in Picture) viewing are available through a range of controls along the bottom edge of the monitor. Unfortunately the interface is a touch confusing and many functions are more easily set via the remote control unit than by furtively digging around in the underbelly of the panel and hoping your prodding will translate properly.

In common with many Samsung screens, the SM730MW features MagicBright and MagicTune options. The first of these offers a range of settings aimed at providing optimum screen quality for various pursuits, including Entertainment, Internet and Text modes. For our money, it's a bit gimmicky and we found the MagicTune facility, which allows for image adjustments and fine-tuning options to be controlled from the PC and stored

on the desktop, a more fulfilling experience. Image quality is good rather than excellent, but the Samsung's prime flaw is its relatively small 17-inch screen size and low 1,280x768 resolution.

DETAIL

Screen size 17-inch

Native resolution 1,280x768 pixels

Contrast 500:1

Brightness 450 cd/m²

Response time 25ms

Viewing angles (H/V) 150°/120°

Built-in tuner Yes

Speakers Yes

68% **PCF says...** "Packed with features but ultimately the size is a letdown."

Philips 200W6

Price £363 **Web** www.philips.co.uk

The design of the Philips 200W6 is utilitarian rather than flash, and workaday aspects include a SmartManage facility for LAN-based asset management, which might please network administrators but will leave the rest of us cold. Typically, the Philips' menu system is a lesson in intuitive

interface design, making it supremely easy to get at and adjust all the monitor's controls.

Our review sample made a dreadful job of lining itself up correctly using the auto-tune feature, frequently losing the right hand side of the picture altogether. Further, manual coaxing was needed to override phase and clock settings in the pursuit of a stable picture for high-frequency test charts but, even then, there was a little ghosting when displaying fine text edges.

On paper, the maximum contrast ratio and brightness of 800:1 and 300 cd/m2 look healthy enough, but we had to set the contrast to 60% and the brightness right up at maximum for the best picture on our review sample. At these settings, however, the tonal separation was actually very good across the whole range from black to white and colour rendition was very natural in

the 6500K colour temperature mode.

Niceties include the now almost ubiquitous provision of both D-Sub and DVI-D connectors for analogue and digital video sources and the 200W6 also includes a USB loop-through connector. However, since they've gone to the trouble to put in USB, we wish they'd gone the distance and built a full USB hub into the monitor instead. At least the stand unit is better than most, offering full tilt, swivel and height adjustment flexibility.

Speed looks impressive on the spec list at 8ms, although closer inspection reveals that this is a bit of a cheat, as Philips quote the 'grey to grey' value rather than the black to white rise and fall times, which can be twice as long. Even so, the monitor performed well in DVD movie and gameplay tests.

DETAIL

Screen size 20-inch

Native resolution 1,680x1,050 pixels

Contrast 800:1

Brightness 300 cd/m²

Response time 16ms

Viewing angles (H/V) 176°/176°

Built-in tuner No

Speakers Yes

65% **PCF says...** ... "Some ghosting and no extra brightness in reserve."

BenQ FP202W

Price £381 **Web** www.benq.co.uk

Weighing in at around £30 more than the ViewSonic VA2012w, BenQ's FP202W has an almost identical spec, at least in terms of maximum contrast and brightness, response time and native resolution. However, while some of BenQ's monitors add all sorts of bells and whistles in the shapes of advanced sound features and even built-in webcams, the FP202W is completely bereft in the frills department. The lack of speakers enables a thin black bezel, which makes the monitor look small for its size (sounds odd but it's true). Further minimalist tendencies see the control buttons set into the side of the case, rather than being on the front, but it has to be said that black buttons, mounted in a black case with a black legend make for more than a little squinting and awkwardness when it's time for fiddling with adjustments.

A quick stab of the auto-tune button, once we'd found it, brought the screen into perfect basic adjustment. Similar to

DETAIL

Screen size 20-inch

Native resolution 1,680x1,050 pixels

Contrast 600:1

Brightness 300 cd/m²

Response time 8ms

Viewing angles (H/V) 170°/170°

Built-in tuner No

Speakers No

Samsung's MagicBrite system, the FP202W features 'Senseye', which sets about serving up the ideal picture settings for standard use, two flavours of movie-watching and photo viewing. In our tests, the two movie modes were remarkably similar, while the photo setting was a little over-bright. As usual, the best option turned out to be the standard setting, with a few tweaks of the brightness and contrast.

Tonal range proved very good on our test sample, although subtle differences in highlights and lowlights tended to merge into each other a little too easily. The FP202W certainly seemed to favour vivid contrasty picture quality over absolute accuracy. For gaming and movies, the response speed more than lived up to its 8ms billing, with wonderfully fluid motion. Unfortunately this is largely

irrelevent, as for accuracy, ease of adjustment and value for money, the BenQ loses out to ViewSonic's offering.

72% **PCF says...** "Stylish and uncluttered, with very vivid picture quality."

Acer AL2032 WA

Price £474 **Web** www.acer.co.uk

Acer has been making a name for itself recently in the monitor market, with some great quality screens at bargain prices. The company has raised its game, however, with the AL2032 WA, which is a stunningly finished piece of kit. The monitor's sleek elegance makes it look great even before you switch it on, combining a curvy case design with a space-saving horseshoe-shaped base, somewhat reminiscent of the Hercules ProphetView monitors of a couple of years ago.

It's when you power up the Acer that the real quality shines through. Using CrystalBrite technology, similar to Sony's XBlack system, digital photos, movies and games take on a new lease of life with vivid yet accurate colour rendition, coupled with excellent tonal range and separation of shades.

The AL2032 WA spoils you for choice when it comes to inputs. Unlike the Sony, there's no built-in TV tuner but the monitor does feature both D-Sub and DVI-D computer inputs as well as composite video, S-Video and a SCART connector, which broaden its range

DETAIL

Screen size 20-inch

Native resolution 1,680x1,050 pixels

Contrast 800:1

Brightness 300 cd/m²

Response time 8ms

Viewing angles (H/V) 160°/160°

Built-in tuner No

Speakers Yes

considerably. The 1.1W speakers are a bit lacking but still sound better than the average LCD squawkers.

To give full reign to the excellent picture quality, the response time is also nice and quick, at 8ms, so there's no slouching around or unwanted video side-effects when playing games or watching DVDs. For more workaday tasks, text is pin-sharp on the screen but it's really in video editing and photo manipulation that the screen's high degree of accuracy come into their own. Price-wise, the Acer is nearly £100 more than the BenQ but almost £150 cheaper than the Sony. This makes it really a bit of a bargain if you want the Sony's high picture quality but don't absolutely need a built-in TV tuner. It's a high-quality panel that ticks all the essential boxes and a few more besides.

gold PCFormat

90% **PCF says...** "With stunning picture quality, it's the one to buy if you don't need a tuner."
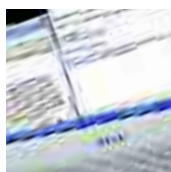
Sony MFM-HT205

Price £619 **Web** www.sony.co.uk

Normally it's all but impossible to find any 'multi-function' device that excels in every area, without compromising along the way, but Sony's brand new MFM-HT205 bucks the trend. Based on the company's XBlack LCD system, which was originally developed to enable higher brightness and lower power consumption in laptop screens, the technology comes of age in this fully-fledged desktop monitor. Detail is razor-sharp, colour rendition is supreme and brightness and contrast are dazzling (at least when you want them to be).

Like the two other monitors in the group with a built-in TV tuner, the MFM-HT205 comes with a wireless remote control, which also makes short work of set-up options. Two sets of component video inputs, as well as S-Video and a SCART connector, all have their own dedicated stereo audio inputs, along with both D-Sub and DVI-D PC inputs, so you're really spoiled for choice at the monitor's feeding time. As you'd expect, the remote control gives Picture in

DETAIL

Screen size 20-inch

Native resolution 1,680x1,050 pixels

Contrast 1,600:1

Brightness 470 cd/m²

Response time 6ms

Viewing angles (H/V) 170°/170°

Built-in tuner Yes

Speakers Yes

Picture (PiP) choices as well, for ultimate multi-tasking versatility.

Sony televisions have long had a reputation for sounding as good as they look and the MFM-HT205 makes its mark here as well, with chunky sound quality based on relatively hefty built-in speakers and SRS WOW audio technology. Back to the looks, the 20-inch widescreen display is easily bright enough for TV viewing across a room, even in the brightest ambient lighting, with a whopping 1,600:1 maximum contrast ratio and 470 cd/m2 maximum brightness.

For gameplay and movie watching, the response time of 6ms is also the fastest on test, further extending the Sony's lead over its competitors. Fully HDTV-ready, it's also fully up to speed with all the popular HDTV standards

like 1080i and 720p. Most importantly, however, it's simply got the best picture quality of any monitor in the group.

95% **PCF says...** "Whether used as a TV or as a PC monitor, it's simply the best."

gold **PCFormat**

Eizo FlexScan S2110W

Price £720 **Web** www.eizo.co.uk

Going an inch bigger than most of its competitors, the S2110W is in a minority of one, offering a meaty 21-inch screen size. The native resolution is the same as the 1,680x1,050 offered by 20-inch models,

and better news is that the larger dot pitch doesn't impair the seamless look of the display, even close up.

Another unique feature of the Eizo, in this group at least, is that it offers two DVI-I input sockets, rather than the more usual DVI-D standard, which you can feed with either analogue or digital video sources. With professional aspirations, the S2110W also offers a wider than average range of set-up options, including a huge array of colour temperatures, hue and saturation adjustments, gamma variations and so on. In spite of all this, the monitor refused to tune itself correctly to our analogue video input, giving poor high-frequency test chart response and blurry fonts in spite of any amount of manual overriding of the auto-tune settings. Switching to

DETAIL

Screen size 21.1-inch

Native resolution 1,680x1,050 pixels

Contrast 1,000:1

Brightness 450 cd/m²

Response time 16ms

Viewing angles (H/V) 178°/178°

Built-in tuner No

Speakers No

a digital video input cured this problem completely and the monitor gave a pin-sharp display.

The Eizo has no internal speakers, save for one that produces an annoying beep every time you press one of the control buttons. The only 'extra' is a 2-way USB 2.0 hub, which might come in handy, so you're really paying top dollar for picture quality. That's fair enough, because picture quality is what the S2110W does best. In our tests, colour rendition proved supremely accurate and tonal separation was second to none. Apart from its dodgy dealings with analogue video inputs, and looks that only its mother could love, the Eizo is a quality piece of kit. At over £100 cheaper, however, the Sony offers much better value for money, equally good picture quality and a lot more besides.

80% **PCF says...** "Great picture quality but not much else, it's one for the purists."

top gear **PCFormat**

LG M2343A

Price £809 **Web** Web www.lge.co.uk

The most expensive of the multi-function monitors in the group, the LG M2343A is also the largest, measuring in with a 23-inch screen size. This makes an undeniably positive difference if you're viewing the monitor in TV mode from the other side of the room, as it looks a whole lot bigger than the extra three inches would imply, compared with the 20-inch screens.

All the usual multi-function trimmings include a wireless remote control, S-Video and component video inputs and, better than the rest, two SCART sockets rather than just the one. All this is on top of the standard D-Sub and DVI-D PC video connectors, making the LG well equipped to handle feeds from almost any source. As with the Samsung and Sony PC/TV monitors, the remote control makes short work of channel hopping, adjusting picture controls and organising PiP content. Also, like the Samsung, there's full Teletext support.

Colour settings are a little basic with only 'Normal', 'Cool' and 'User' options

DETAIL

Screen size 23-inch

Native resolution 1,366x768 pixels

Contrast 550:1

Brightness 600 cd/m²

Response time 12ms

Viewing angles (H/V): 178°/178°

Built-in tuner Yes

Speakers Yes

on offer but, overall, colour rendition is quite accurate and tonal separation is good. Sound quality is pretty good too, with generously sized speakers (for an LCD, at least), driven by SRS WOW technology. The LG isn't quite a match for the Sony in this respect, but it's not too far off.

The only real problem with the M2343A is that, while it looks good from a distance, its large screen size is coupled with a native resolution that's even lower than that of the 20-inch screens in the group. This means that the dot pitch spacing is uncommonly, and uncomfortably, high. While it's not as bad as on some 28-inch PC/TV models we've seen in the past, the display looks noticeably like a sea of dots

when the monitor is sat at close range on the desk. Better, then, to use it as a living room screen rather than a monitor.

70% **PCF says...** "Great from a distance but not quite so impressive up close."

Dell 3007WFP

Price £1,471 **Web** www.dell.co.uk

This is a beast. The massive 30-inch Dell quite literally puts other monitors in the shade. But if you think you know all about big-screen LCD monitors, think again. All too often, big screen sizes deliver no extra pixels, making them look awful up close on the desktop. For example, the monstrous,

£7,500 LG M5500C that we reviewed in last month's issue had a screen size of 55 inches, but a paltry native resolution of just 1920x1080 pixels. By contrast, the Dell 3007WFP boasts a native resolution as high as any we've seen on an LCD, at 2,560x1,600 pixels.

The high resolution makes multi-tasking and digital photo editing an absolute joy, but it's not for the faint-hearted. As well as the sizeable price tag on the monitor itself, most graphics cards cannot stretch to the Dell's high resolution demands. For this you'll need one of the latest (and most upmarket) graphics cards that supports DVI Dual-Link output, like the NVIDIA GeForce 7800 GTX or Quadro FX3450 card, which also happen to be available from Dell, at £385 and £819 respectively.

In keeping with its high-end aspirations that lean towards

DETAIL

Screen size 30-inch

Native resolution 2,560x1,600 pixels

Contrast 700:1

Brightness 400 cd/m²

Response time 14ms

Viewing angles (H/V) 178°/178°

Built-in tuner No

Speakers Optional

DRM HELL

To play HD-DVD and Blu-ray movies, HDCP decryption will be required in every component of your PC – including your monitor. Let's hope the super-expensive 3007 gets reissued with it built in.

market sectors including professional video and photo editing, 3D modelling and the like, the Dell produces a wonderfully crisp, sharp image, with excellent tonal range and highly accurate colour rendition. You also get 90-degree pivot for portrait mode viewing and the monitor has a built-in four-port powered USB hub and a nine-in-one multi-format card reader as standard. However, if you want matching speakers, you'll have to spend an additional £35 on Dell's AS501 Soundbar, as this comes as an optional extra.

Leaving the price issue aside, we'd find the Dell difficult to resist. It has performance that matches its outsized frame and we soon came to love the extra space that all that resolution afforded, in conjunction with a screen size that actually made it usable.

88% **PCF says...** "It really is fantastic, but buy it and your wallet will be torn asunder."

SPECIFICATIONS AND PERFORMANCE
From mini to mighty, here's how they measure up

	£99 **Digimate** **15"Widescreen** **60%**	**£349** **ViewSonic** **VA2012w** **75%**	**£361** **Samsung** **SM730MW** **68%**	**£363** **Philips** **200W6** **65%**	**£381** **BenQ** **FP202W** **72%**	
PRICE	£99	£349	£361	£363	£381	
MODEL	15-inch widescreen	VA2012w	Samsung SM730MW	200W6	FP202W	
MANUFACTURER	Digimate	ViewSonic	Samsung	Philips	BenQ	
WEB	www.aria.co.uk	www.viewsoniceurope.com/uk	www.samsung.com/uk	www.philips.co.uk	www.benq.co.uk	
DISPLAY						
SCREEN SIZE	15.4-inch	20.1-inch	17-inch	20-inch	20-inch	
DISPLAY COLOURS	262,000	16.7 million	16.7 million	16.7 million	16.7 million	
NATIVE RESOLUTION	1,280x720 pixels	1,680x1,050 pixels	1,280x768 pixels	1,680x1,050 pixels	1,680x1,050 pixels	
DOT PITCH	0.259mm	0.258mm	0.289mm	0.258mm	0.258mm	
CONTRAST RATIO	400:1	600:1	500:1	800:1	600:1	
BRIGHTNESS	220 cd/m²	300 cd/m²	450 cd/m²	300 cd/m²	300 cd/m²	
RESPONSE TIME	25ms	8ms	25ms	16ms	8ms	
HORIZONTAL VIEWING ANGLE	120°	140°	150°	176°	170°	
VERTICAL VIEWING ANGLE	140°	125°	120°	176°	170°	
CONNECTIONS						
PC VIDEO INPUTS	1	2	2	2	2	
ANALOG D-SUB	D-Sub	D-Sub	D-Sub	D-Sub	D-Sub	
DIGITAL DVI	No	DVI-D	DVI-D	DVI-D	DVI-D	
S-VIDEO	No	No	Yes	No	No	
AV COMPOSITE	No	No	Yes	No	No	
SCART	No	No	Yes	No	No	
USB	No	No	No	USB 2.0 loop through	No	
MEDIA CARD READER	No	No	Yes	No	No	

PCFVerdict

Sometimes it's hard to pick a winner

For anyone who's desperate for a widescreen format monitor but can't really afford the habit, the Digimate is cheap and reasonably cheerful, although it's definitely a bit on the small side. Even the Samsung SM730W, at three and a half times the price, only offers a 17-inch viewing size, which is a bit cramped for our liking, having a vertical resolution of just 768 pixels. The Samsung's saving grace is that it

makes such a good job not only of building in a TV tuner but making it work so seamlessly with PC-based monitor functions. The same goes for the LG M2343A but, in this case, the more generous 23-inch screen size is badly let down by the same small vertical resolution as the Samsung. Coupled with its larger screen size, this makes for an overly large dot pitch which looks poor close up. The LG is also comparatively

rather expensive for what it is, costing over £800.

Considering all of the above, and leaving the Sony aside for the moment, we'd go for a widescreen monitor without a built-in TV tuner, which gives much more choice and value for money. For example, the ViewSonic VA2012w offers pretty good picture quality and a pleasantly large 20-inch viewing size for its £349 price tag.

NEXT MONTH 10 DESKTOP SETS GO HEAD TO HEAD

£474 Acer AL2032 WA	£619 Sony MFM-HT205	£720 Eizo FlexScan S2110W	£809 LG M2343A	£1,471 Dell 3007WFP	
90% gold PCFormat	95% gold PCFormat	80% top gear PCFormat	70%	88%	
£474	£619	£720	£809	£1,471	**PRICE**
AL2032 WA	MFM-HT205	FlexScan S2110W	M2343A	3007WFP	**MODEL**
Acer	Sony	Eizo	LG Electronics	Dell	**MANUFACTURER**
www.acer.co.uk	www.sony.co.uk	www.eizo.co.uk	www.lge.co.uk	www.dell.co.uk	**WEB**
					DISPLAY
20-inch	20-inch	21.1-inch	23-inch	30-inch	**SCREEN SIZE**
16.7 million	16.7 million	16.7 million	16.7 million	16.7 million	**DISPLAY COLOURS**
1,680x1,050 pixels	1,680x1,050 pixels	1,680x1,050 pixels	1,366x768 pixels	2,560 x 1,600	**NATIVE RESOLUTION**
0.258mm	0.258mm	0.270mm	0.372mm	0.250mm	**DOT PITCH**
800:1	1,600:1	1,000:1	550:1	700:1	**CONTRAST RATIO**
300 cd/m^2	470 cd/m^2	450 cd/m^2	600 cd/m^2	400 cd/m^2	**BRIGHTNESS**
8ms	6ms	16ms	12ms	14ms	**RESPONSE TIME**
160°	170°	178°	178°	178°	**HORIZONTAL VIEWING ANGLE**
160°	170°	178°	178°	178°	**VERTICAL VIEWING ANGLE**
					CONNECTIONS
2	2	2	2	1	**PC VIDEO INPUTS**
D-Sub	D-Sub	DVI-I	D-Sub	No	**ANALOG D-SUB**
DVI-D	DVI-D	DVI-I	DVI-D	DVI-D (Dual Link)	**DIGITAL DVI**
Yes	Yes	No	Yes	No	**S-VIDEO**
Yes	Yes (x2)	No	Yes	No	**AV COMPOSITE**
Yes	Yes	No	Yes (2x)	No	**SCART**
No	No	2-Way USB 2.0 hub	No	4-Way USB 2.0 hub	**USB**
No	No	No	No	9-in-2 card reader	**MEDIA CARD READER**

For an extra £30 or so, the BenQ is more stylish and has fairly similar picture quality although, in our tests, the ViewSonic just had the edge and both were slightly better than the Philips. The Eizo FlexScan S2110W features all manner of set-up adjustments and provided arguably the most clinically accurate display of the group, with superb tonal separation and colour rendition, but it's very expensive considering the lack of extras, and the finish looks horribly cheap.

Two monitors really stood out in the group throughout our tests. One was the Acer AL2032 WA and the other was the Sony MFM-HT205. Both use revolutionary display screen technology – Acer's CrystalBrite and Sony's XBlack, which breathes vibrant life into digital photos, DVD movies and games, making other screens look a little dull by comparison. Both the Acer and the Sony are beautifully designed and finished with excellent build quality. For this reason, we'd have to pick two winners – the Acer if you don't want a built-in TV tuner and the Sony if you do.

That just leaves the monstrous Dell 3007WFP. It's three times the price of the Acer but the sheer size and resolution does make it highly desirable, if you can afford both the monitor and a high enough powered graphics card to drive it, that is. **PCF**

The Sony offers full multi-function benefits and stunning picture quality, but the Acer is great if you don't need a tuner.

Al Bickham
TURNING BLU

Why I'm sold on the idea of HD optical drives

Honestly, if you'd have asked me just a month ago, I wouldn't have given a fig for HD-DVD and Blu-ray. The long, tedious and extremely drawn-out 'competition' between the two formats that the manufacturers were too precious, scared and essentially money-grabbing to work together on a unified format, and just the fact that it's essentially a higher-capacity DVD. Yawn.

But this month, having actually got to jimmy around with one, my interest's piqued. You can read all about it on page 36, but the crazy thing is, Blu-ray writes and reads at a speed which puts standard DVD to shame – 1.7Gb per minute for data writing, where DVD only manages 0.47 GB per minute. Movies aside (and don't get me started on HDCP) it's an excellent storage medium; on a single 25GB disc, you can backup an entire Windows installation, and more besides. The fact that the first discs will also be rewritable makes it especially attractive for PC users. And of course, Blu-ray drives can also read standard CDs and DVDs. Next month, we'll get a hands-on with HD-DVD. Can it match Sony's format for wow factor?

PCFormat
How to buy kit

ESSENTIAL BUYING ADVICE

This month has seen a bit of a shake-up in the way we bring you the latest buying advice. Instead of the usual reams of data in the magazine, we've decided to collate all our valuable tips and stuff them on the fabulous coverdisc that adorns this very issue. You can still expect the same careful, considered and contemporary guidance through the potential minefield of kit procurement, just in a more conveniently digital form.

This month's also been a biggy for components. Not only has Blu-ray finally surfaced as a data storage optical format, but NVIDIA has also announced its next-gen card, the GeForce 7900. You can read about these on pages 36 and 56 respectively. ATI's Crossfire system has also seen a much-needed update, in the form of the RD580 chipset. Check back next month, when we'll be benchmarking a pair of X1900XTX cards in Crossfire configuration.

For the complete Buyers' Guides, see your cover DVD and www.pcformat.co.uk

Jargon Buster
Making sense of the noise

Pipeline panic
GPUs have different numbers of pixel pipelines. Generally speaking, the more the better; however, that's changing as ATI is now using fewer but broader pipes.

Latently obvious
Memory access speed is measured in CAS latency, (Column Address Strobe) or CL – the lower the better. Really fast RAM is CL2 so, when buying, get the fastest you can. Note that DDR still features lower CL than DDR2.

Cache machine
The L2 cache of a CPU is a small block of superfast RAM dedicated to the CPU. Here, the CPU stores recent calulations so it doesn't have to keep doing them. Forget processor speeds: L2 cache size is the major difference bewteen Pentium and Celeron performance.

Panel beater
The millisecond rating of an LCD monitor isn't the only mark of quality. Check the brightness of the panel too. You can game quite happily on a 12ms monitor.

Power supply
Every component needs electricity, and the PSU is where it comes from. When shopping for a new one, ensure it has the right connectors and is a reliable brand. Never opt for less than a 350W model.

Cooling
Your CPU is the toastiest component in your PC. Stock coolers tend to be a bit noisy and not as efficient as they could be, so shop around. Look for big, slow-moving fans, which are cooler and quieter than little, fast ones.

Graphics card
Does your motherboard support AGP, or the newer PCI Express standard? Ensure you've got the right graphics card for your board's slot, and check overleaf for the best cards in every price category.
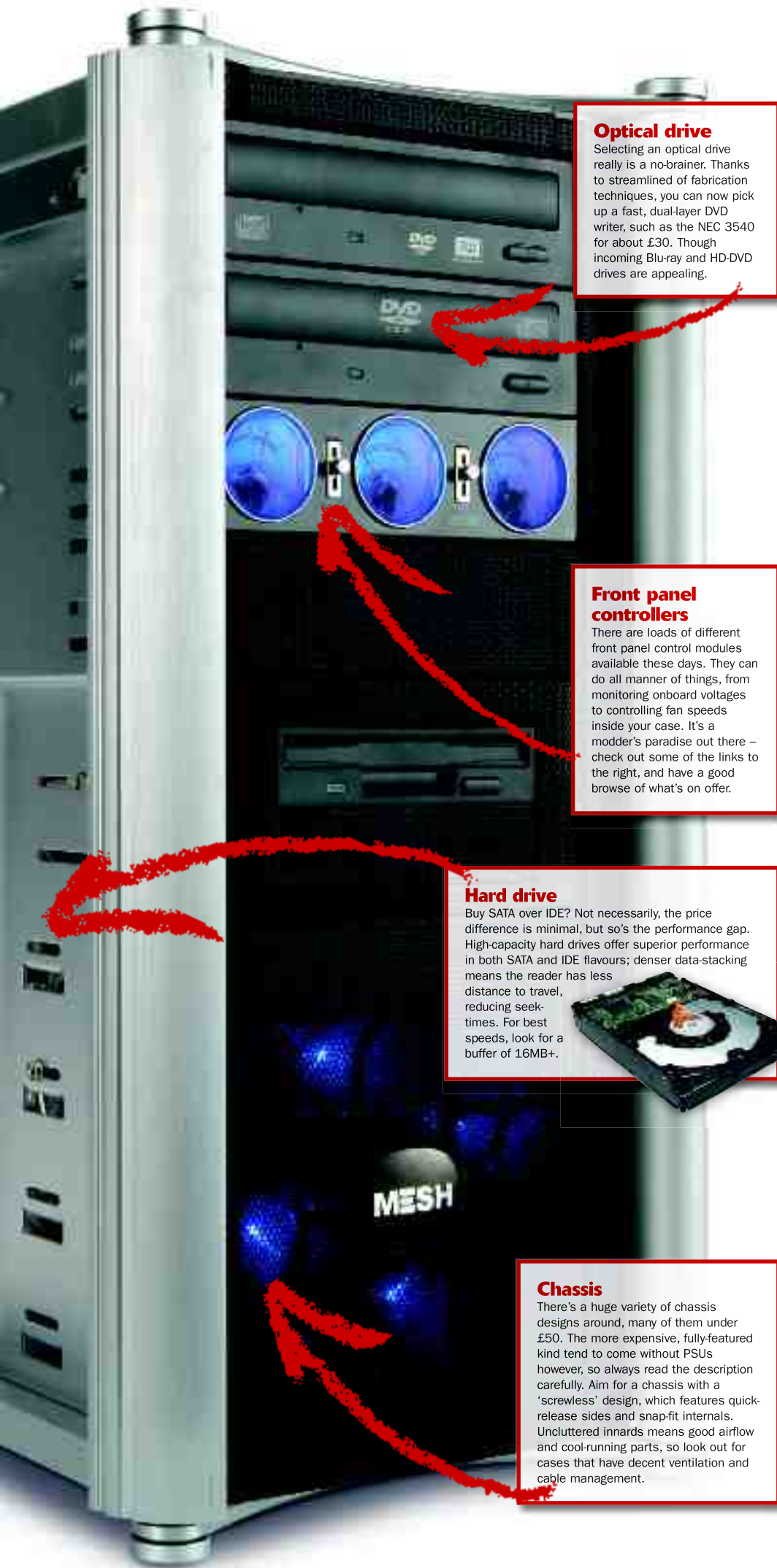
Optical drive
Selecting an optical drive really is a no-brainer. Thanks to streamlined of fabrication techniques, you can now pick up a fast, dual-layer DVD writer, such as the NEC 3540 for about £30. Though incoming Blu-ray and HD-DVD drives are appealing.

Front panel controllers
There are loads of different front panel control modules available these days. They can do all manner of things, from monitoring onboard voltages to controlling fan speeds inside your case. It's a modder's paradise out there – check out some of the links to the right, and have a good browse of what's on offer.

Hard drive
Buy SATA over IDE? Not necessarily, the price difference is minimal, but so's the performance gap. High-capacity hard drives offer superior performance in both SATA and IDE flavours; denser data-stacking means the reader has less distance to travel, reducing seek-times. For best speeds, look for a buffer of 16MB+.

Chassis
There's a huge variety of chassis designs around, many of them under £50. The more expensive, fully-featured kind tend to come without PSUs however, so always read the description carefully. Aim for a chassis with a 'screwless' design, which features quick-release sides and snap-fit internals. Uncluttered innards means good airflow and cool-running parts, so look out for cases that have decent ventilation and cable management.

Best buy
Point your purse at this…

AMD Barebones £586
www.komplett.co.uk
The perfect starting point for a powerhouse PC – and in a small form-factor to boot – this custom-built unit from Komplett comprises some promisingly powerful kit, and doesn't cost the Earth. Assuming you already have a monitor and peripherals, it's a bargain inroad to performance computing, and would make a lovely little media centre.

Under the hood
CPU AMD Athlon 64 3800+
Memory 1GB DDR 400
Graphics Integrated Radeon Xpress
HDD 250GB SATA2
Optical 16X Dual Layer DVD RW
Audio AC97 7.1 surround
Chassis AOpen XC Cube EZ482
OS Windows XP Home SP2
Warranty 3 years

Recommended
Top PC and component stores

www.overclockers.co.uk
www.aria.co.uk
www.pcnextday.co.uk
www.scan.co.uk
www.komplett.co.uk
gladiatorcomputers.com

THE LISTS
On your cover DVD
Everything you could possibly need to know when buying CPUs, graphics cards, games, soundcards, monitors and more is on your 9.4GB DVD.

Subscribe to and save

» **FREE delivery to your door**

» **Never miss an issue**

» **DVD-ROM packed with software with every issue**

» **Money-back guarantee – we'll refund unmailed issues if you're not entirely satisfied**

YES! I would like to subscribe to PCFormat!

UK PRICING

Just £13.75 every three months by Direct debit (UK only) – SAVE 34%!
THAT'S A SAVING OF £29.57 A YEAR!*

PERSONAL DETAILS

Choose your free gift! (please tick one)
- ☐ Nortek NX Vega webcam
- ☐ Antec VCool case cooler
- ☐ Belkin 20-piece toolkit
- ☐ Trust 4-port USB hub

Title .... Forename ....

Surname ....

Address ....

....

....

Postcode ....

Telephone ....

If you'd like to receive emails and SMS from PCFormat and Future Publishing and its group companies containing news, specials offers and product and service information, please include your email and mobile no. below.

Email ....

Mobile no. ....

Please tick here if you are happy for us to pass your details to carefully selected companies so they can send you relevant information about their products or services by email ☐ or SMS ☐.

OFFER CODE P014

PAYMENT DETAILS

Please complete the Direct Debit form (I understand that £13.75 will be debited from my account every 3 months)

Originator's Identification Number	
768195	PCFormat, Unit 4, Tower House, Sovereign Park, Market Harborough, Leicestershire, LE16 9EF

Instruction to your Bank or Building Society to pay Direct Debits
To the Manager (Bank name) ....

Address ....

Postcode ....

Name(s) of account holder(s) ....

Branch sort code

☐☐ ☐☐ ☐☐

Bank/Building Society account number

☐☐☐☐☐☐☐☐

Please pay Future Publishing Direct Debits from the account detailed on this Instruction subject to the safeguards assured by the Direct Debit Guarantee. I understand that this instruction may remain with Future Publishing and if so, details will be passed electronically to my bank or building society.

Ref No (Office use only)

☐☐☐☐☐☐☐☐☐

Signature(s) .... Date ....

Banks and Building Societies may not accept Direct Debit Instructions for some types of account.

TERMS AND CONDITIONS: *Based on buying 13 issues on UK newsstand. Details of the Direct Debit guarantee are available on request. This offer is for new subscribers only. You will receive 13 issues per year. Please allow 28 days for delivery of your gift. Gift stock is limited. In the event of the gift not being available, Future Publishing reserves the right to offer a substitute gift of a similar value or free issues of the magazine. Your subscription will start with the next available issue. Please tick here if you do NOT wish to receive relevant information about products or services from Future Publishing or any of its group companies by post ☐ or telephone ☐. Please tick here if you do NOT wish us to pass your details to carefully selected companies to enable them to contact you about their products or services by post ☐ or telephone ☐.

OFFER ENDS 30 APRIL 2006

Return this form FREEPOST to: PCFormat Subscriptions, Freepost RLSC-SXSE-SKKT, Unit 4, Tower House, Sovereign Park, Market Harborough, Leicestershire, LE16 9EF

Project Eden

REDISCOVER A team-based puzzler from way back that's now available at a knock-down price

This forgotten gem sees you control the Urban Protection Agency squad, sent down into the bowels of a metropolis to deal with a nasty sounding gang called the Death Heads.

You must swap between characters to solve the various problems ahead. The reason this works so well in multiplayer is that with four players, you can play through the story cooperatively with friends.

While the combat isn't up to much, the huge levels become more complex as the game progresses, such as one section where the crew become separated.

Here, the actions of half the team on one side of the level affect the pair marooned on the other side, and vice versa, meaning some lateral thinking is required. There is a certain joy to working through a puzzle with others, and playing is relaxed and thoughtful. Plus there's a reasonably engaging story to keep you interested for the hour or so each level can take. With the game available on the Sold Out label at a fiver a throw, this is not only one of the most rewarding, but also one of the more affordable cooperative experiences available at present.

Don't forget your buddies trapped on the other side of the level. It's a bit *Crystal Maze* in places.

```
FALSE PROPHETS
"MP3 ISN'T GOING TO GO AWAY, AND NO ONE'S GOING TO FALL
FOR AN INDUSTRY-OWNED SUBSTITUTE FOR THE FREE FORMAT."
IN THE BLISSFUL DAYS OF PCF92 (FEBRUARY 1999), LITTLE DID
WE KNOW THAT WE'D BE SOON BE SWAMPED WITH DRM-RIDDLED
PROPRIETARY FORMATS AT THE BEHEST OF THE MUSIC INDUSTRY.
```

Free llama

Since Gridwars has taken the office by storm this month, we thought we'd revisit another *Robotron*-inspired classic. Llamatron was a product of the fevered mind of Jeff Minter. One of the first games to introduce the shareware model to European gamers, Jeff asked for £5 if you liked the game and in return he would send you a poster of a llama. Deals don't come much better than that. Well, they didn't until the PC version became freeware.

Get more info about Llamatron at
www.llamasoft.co.uk/lc-other.php

Speak easy

REINVENT Tired of sitting in front of your PC to make Skype calls? Here's a wireless solution…

For some reason, telephones seem to be something people accumulate. It appears that a person simply can't have enough unused phones in their house, and if you were early to leap onto the cordless bandwagon, some of your hoarded handsets may even be wireless. As a parallel problem, the main reason why VoIP isn't more prevalent is because most people have to sit in front of their PC to make the calls. Can you see where we are going with this?

According to a chap called Chris Järnåker (**www.grynx.com/index.php/projects/siemens-skype**), it is entirely possible to convert a cordless telephone into a PC microphone and speaker combo. Imagine having a free conversation via VoIP in the comfort of your boudoir, or peace and quiet of your garden. The hack itself involves soldering standard 1.5mm headphone and microphone cables to the innards of the base station, meaning that rather than connecting to the phone line, the sound signals received from the cordless handset are fed straight into your soundcard. **VoIP conversations from anywhere in the house, for free? We can't wait.**

APRIL 1993

GAME
ZOOL

SCORE
PCF 19 86%

SC 025200

SC 091325   HI 0018

14→   T 436   LI 00

SC 121947   HI 1219

T 148   LI

REMEMBER...

Zool was a fast console-inspired platformer that finally proved that the beige box could provide high-speed thrills to match Mario

With the number of console conversions currently doing the rounds, it seems hard to believe that there was once a time when the Megadrives and Super Nintendos had a monopoly on action games,. As a result of this bias, when *PCFormat* got its hands on this zippy alien ninja, it was a true revelation. *Zool* was lightning fast, and the themed levels required you to jump, wall climb and spin attack your way past such obscure foes as liquorice-vomiting bees and angry drums.

It sounds simple, but fiendish design and limited health meant that *Zool* would challenge even the most hardcore of platform fans, and made the game a perfect tonic to the more sedate pace of PC games that had come before it.

Debate raged at *PCF* over whether this was the last gasp of the personal computer as the thinking person's games machine, and even whether arcade games were a waste of 'good programming talent'. Either way, *Zool* was the start of something entirely new for PC gamers and we loved it.

ALSO OUT THEN...

MICHAEL JORDAN IN FLIGHT
The basketball legend contributed a digitised performance to this, but the game was so dark it appeared to be set entirely in the bottom of a coal mine. Still, this was a reasonable stab at representing the sport and featured a fully editable replay mode.

SCORE
PCF 72%

RINGWORLD
Based on Larry Niven's classic book, this was a point-and-click affair that involved giant orange cats and bizarre encounters with blue alien women. Some attractive sci-fi background art couldn't hide the fact that this was far too short and not particularly inspiring to play, either.

SCORE
PCF 61%

SPACE QUEST V
In bumbling space janitor Roger Wilco's fifth adventure, he finally achieved captaincy of a vessel by cheating his way through the entrance exams. *PCF* was less impressed by the series staple: the unavoidable deaths that lurked behind every corner. Tsk.

SCORE
PCF 48%

Restart

LookingBack
THE CREATOR'S CRITIQUE

Fact File
National hero

Subject Brian Reynolds
Job title
Lead Designer
Developer
Big Huge Games

Brian's disappointed with his graphics. We think he's a little hard on himself.

The purple dado rail fad died out in the Tudor period.

Rise of Nations

Whole civilisations rose in under an hour, but, as Kieron Gillen discovers, the game took a lot longer than that to make…

Sitting down with Brian Reynolds, you can't help but learn things. The cradle of civilisation? Not, as historians would argue, somewhere in Iraq, but actually North Yorkshire. Well – not civilisation, but *Civilization 2*, as Brian was crouched in a small rainy town in Northern England while making the venerable classic. But things change, and he's now in a rainy, North American town at Big Huge Games putting the finishing touches of *Rise of Legends*. It's the perfect time to talk about their previous triumph with *Rise of Nations*.

Industry veterans splintering into a new company often do so to make a specific game. Big Huge, however, had a more general mandate. "There was no question it was going to be an RTS, and would fit inside some parameters of that genre," Brian describes, "We certainly talked about some more radical departures than *Rise of Nations* was, and some less radical ones which would have been dead in the mainstream… but mainly I wanted to get into RTS gaming." So they had a bag of designs which they went to publishers with, selecting three that showed a variety of topics and approaches to see which they were hot and cold upon.

In the end, Microsoft went for the game that became *Rise of Nations*, which blended *Civilization* with the standard RTS mould, playing through the entirety of history in an hour. One of their biggest problems was proving that it was even feasible. "Because the only big historical RTS at that time had been *Age of Empires*, everybody thought of history as going at the pace *Age of Empires* did," Brian explains, "No-one could imagine very well that you could do a history game of *all* of history and not have it take six hours to play." To this end, they even had software milestones to achieve along the way to prove that it could play within an hour. "To us it

was: 'Of course you can play history as fast as you want to play'," Brian recalls, "Part of the whole magic was because there were all these moments in civilisation, like your man going from having a bow and arrow to having a gun, and then a rifle, then a machinegun and then a tank. You get these really crisp transitions where it's really visually obvious that he'll be completely different in how he'll behave, which you don't really have if you do a period piece, just one or two centuries."

GRAND DESIGNS
The merging of two genres played to their strengths – and to their methodology, not solely because they'd worked on *Civ* previously. "We were trained in a kind of game design that's good when you want to combine two genres into one," Brian notes, "because we do a lot of prototyping and iteration when we throw a whole bunch of ideas at the wall and a bunch of them won't work out, and others will, but we never know in advance. We brainstorm a lot, do a lot of coding and eventually something fun comes out at the end." In other words, have the idea, implement the idea, play the idea, keep what works, lose what doesn't and repeat. "What had about 10 things we thought were cool in turn-based gaming which might work well in RTS games," Brian adds, "Maybe three or four of them worked. One of them was national borders. Another was Click! And… you have a musketeer. Click! And… he has a gun. The jumping through eras of time. Capturing cities also worked out pretty well."

Of course, not everything resulted in something so worthwhile. For example, the original technology tree. "I keep it in my desk," Brian grins, "It's something the artists laugh

> "Rise of Nations blended Civilization with real-time strategy elements"

The red chaps had their fag break rudely interrupted.

142 PCFormat APRIL 2006

Condense the onward march of history into a minimalist hour's worth of play.

about, they call it the Tech Bush. As a guy who'd worked on *Civilization* and *Alpha Centauri* where things branch and go around, we tried to put that into a real-time strategy game. And it was a disaster when we first tried it. We rearranged everything and it was still a disaster. And then another version, which was still a disaster." It was simply too complicated to work in a real-time game, with five different categories of technology, all hosted in their own buildings.

INNOVATION NATION
"So you'd need fishing at the market to do something at the library. And people were just lost and they couldn't figure it out," Brian explains, "They'd see it requires fishing at the market, and they wouldn't even have it yet, and they'd build that and look for fishing, which wouldn't be there as you can't get fishing until you have – oh, I don't know – rope-tying, which comes from the temple as it's for some religious thing. And people were completely lost. There was nothing fundamentally different from the *Civilization* tree – it wasn't the same, but the same idea – and it was totally unworkable in an RTS." Eventually, the radical scaling back of the concept to four unconnected trees, where you could progress down each fork independently was thought of, and worked. The shift in thinking proved difficult for the *Civilization* veteran Brian to deal with. "You mean you can just plumb one line?" Brian says in mock horror, "And not do anything else? It took a while for me to even accept it may be a good

> ## "No-one thought you could put all the history in and keep it pacy"

idea to try. To even try to be convinced. A total paradigm shift."

There's some disappointments. "For an RTS we could have probably done better graphics," Brian recalls, "We did the best we could in the time. They were decent. They were par for the course. But we'd rather had done *better* than par for the course". Similarly, taking some of the mechanics that worked well and making them work *better*. For example, capturing cities. "It was a cool but half-way polished system and a little artificial to how RTS games work," Brian notes, "Why is it taking damage but hasn't fallen down yet? We have a much more immersive version of that in the current game, where you can see that you're capturing it, it's on fire and then you can repair it. So many things that we were only partially able to figure out how to do last time, we knew exactly how to do this time. Even though it's a fantasy, there's a spirit of *Rise of Nations* in terms of a lot of the gameplay ideas."

Ultimately, however, *Rise of Nations* is something which Brian is still clearly hugely proud of. It's Big Huge's first game, and it won both critical acclaim and impressive sales. He's pleased that the innovations we introduced to the format were generally noted. "I think they were spotted really well," Brian notes. "People really liked the things they ought to like – that we thought they would. To the extent we were successful, we were successful because of the innovations, and we sold a pile of them… well, we can't complain." **PCF**

Maths riot
Budding games designers need a firm grasp of numbers

"People come up to me saying they want to be game designers, and ask what courses should they take", Brian smiles, "How about probability and statistics? And that's not what they're thinking. To me, the key thing about being a game designer is being able to look at a curve and imagine the curve you want something to have and knowing what equation will create that curve. I want costs to go up like this and being able to map these things onto other things, to do probability knowing if I do random numbers it'll come out differently. You need to be able to internalise that." So don't spend your maths class like PCF did; use the infinite supply of squared paper to map The Bard's Tale.

Developer Diary

It's a long road between conception and creation, thinks Owain Bennallack

'Creativity is one per cent inspiration, 99 per cent perspiration', is hardly a novel concept – and it's not particularly sweat-inducing to type out. Strike one for this column so far.

It's 100 per cent true though. The number of brilliant ideas that were born and died in pub talk, on airplanes, in the middle of the night, or after a slow germination that went nowhere in the mind of someone who never had the guts to pursue it are legion. The number of ideas that failed to live up to their initial brilliance are innumerable. The number of games ideas that met such a fate are only slightly fewer.

To jaded gamers surveying the sequels in shops and the me-too efforts in the mod scene, ideas seem a rare commodity. This is entirely deceptive: plenty of developers have great notions. But the more innovative your idea, the more work it takes. You've got all the development effort a Battlefield-clone requires, only x-times as much, where x is the number of times you turn to each other and say, sheepishly, that you're going up the wrong path, again.

Even when it's going right, the work just piles up the further you head into a project. Another law: the closer you are to finishing an endeavour, the more the remaining work will multiply, and the later your hours will run.

This is the infamous 'crunch' phase bemoaned of by professional developers (or too often the recently, joyously, ex-professional). The game is close to being finished, but 101 bugs need to be exterminated. Fixing bugs breeds more. Soon everyone is working seven days a week trying to stamp out a project that has ceased to be an inspiration and become an infestation.

Bedroom developers are deluding themselves if they think they can avoid a crunch. To repeat: 99 times more perspiration than inspiration. And if you're not being paid? Double it.

All you can do is resolve to pay the price – at least you'll be one of the few who made their ideas a reality.

Owain is the former Editor of *Develop* magazine.

WIN!

A year's free unlimited broadband

A whole year's worth of lightning fast, no restrictions, 8Mb broadband access, courtesy of freedom2surf.net

Sometimes it seems like only yesterday that a 56K modem was at the pinnacle of high speed internet connections. Nowadays, even remote villagers in Peru can download questionable pictures of Kylie Minogue at astonishing speeds. The penetration of broadband internet is such that if you're still sitting on a dial-up connection you must be feeling like you're astride a pizza delivery moped on the starting grid of a Superbike race.

This is where freedom2surf's award winning ADSL package comes to the rescue. It offers every kind of broadband option you could possibly want, from annual, download-intensive, uncapped accounts to monthly net-surfing contracts. No matter what type you choose, it guarantees to offer the fastest speeds available (up to a maximum of 8Mbps).

TIME TO LOG ON

Head over to **www.freedom2surf.net** and check out the myriad of options available right now. Its latest service, Connect Start, is aimed at the surfers out there who aren't fussed about their downloads and just want super-quick browsing. Coming in at £12.99 for a monthly contract with a 500MB cap, it's ideal for the casual user.

We know that most of our loyal army of byte-hungry readers don't want to feel the constraining hand of download limits hovering over their backs, though, so we've encouraged the kindly folks at freedom2surf to give away three unrestricted, year-long 8Mb accounts. Perfect for all kinds of internet use, from fragging your friends to flirting with freaks...

Unless you're already hooked up with mega-fast, free, unlimited broadband access (in which case, why are you still reading this?) then you're probably already aching with techno-envy. Don't worry, all you have to do is click on the competition link at **www.pcformat. co.uk**, answer the following question and cross every appendage you can. **PCF**

HOW TO ENTER

Answer the question and be lucky!

What is the monthly cap on freedom2surf's Connect Start service?

A) 5GB

B) 10GB

C) 0.5GB

Visit **www.pcformat.co.uk** for your chance to win.

Next month in PCFormat

Are you breaking the law?

Your moral questions about PC use answered

>> **Filesharing 101**
>> **EULAs explained**
>> **Are no-CD patches legal?**
>> **The truth about 'fair usage'**
>> **More…**

Plus! Oblivion, Tomb Raider, PhysX cards, Intel's Conroe & everything you need to know about Windows Vista…

ON SALE 20-04-2006

Over to you... HAVE YOUR SAY

Reader
survey special

Or, a portrait of the reader as a 34 year-old man with money to burn. Earlier this year, *PCFormat* contained a readership survey. The results are in, so how closely do *you* fit the following profile?

You spend 20-odd hours a week using your PC. Where d'you find time to read the mag, then? And a whopping **75%** of you have more than one PC.

The average reader age is 34, and **62%** of you have been reading the mag for three years or more. Bless you for your loyalty. On a not unrelated note, **83%** of you love the Villazon. "Luis should have his own television show, now that would be great viewing!"

Level of expertise varies wildly: **12%** are professional IT workers, **84%** PC hobbyists and **1/3** self-professed expert PC users. "Because of the knowledge I have gathered from *PCFormat* I have been offered a weekend job in computing."

Needs more sleep. Over 20 hours a week in front of your PC monitor is a lot of late night gaming.

"I don't have much money which means I have to buy right every single time. Your hardware reviews allow me to do just that." **You've also bought five games in the last six months. That's more than Adam has!**

Over 1 in 10 of you are IT professionals, and your most wanted piece of kit is a new TFT panel.

Of the £857 of PC hardware you bought last year, 85% was spent online.

WIN

Sign up to our newsletter at www.pcformat. co.uk, and you'll receive the Over To You survey. Bung us your answers and you could bag a Shuttle XPC SN25P barebones system.

53% favour AMD CPUs over Intel ones, and the most wanted piece of kit is an LCD monitor. , "I can only afford a TFT that can display 1,024x768 max." **Sorry, but we don't have any spare Dell 2405FPWs to send you...**

£28,000 per annum is the average reader wage. Conversely, **15%** of you are students and **74%** in full-time work, leaving **11%** shared between silver surfers and the employmentally challenged. "I don't appreciate the excess of dolly bird illustrations, but I accept that's because I am a geriatric old fogie..."

98% of PCF readers are male. No surprises there, but no, we're not putting a young man in chaps on the cover to lure in more women. We still wake at night about that Eminem cover... "Cover models can be distracting; trying the read the intro to the Supertest [*PCF* 180] was difficult! But keep them anyway."

NEXT MONTH
PCFormat issue 187 is on sale 20th April

All results based on unscientific, non-random samples.